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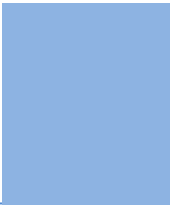
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Ownership Structure and Influence: A Multivariate Analysis of the Credit Risk Assessments

By Abdullah Ashuayree Alkhawaldeh

The Hashemite University, Jordan

Abstract - The intention is to examine the determinants of the CRs for Jordanian companies listed in the Amman Stock Exchange (ASE). The analyses which will be used to fulfil this goal are: First, a descriptive analysis that relates to dependent and independent variables, univariate analysis which is related to independent variable descriptive of only one variable, bivariate and correlation analysis (between two variables), parametric and non-parametric tests. Second, multivariate's analyses are undertaken, which are related to all independent variables by using many statistical tools such as untransformed ordinary least squares (U_OLS), transformed ordinary least squares (T_OLS).

Further, as to the application, the current study makes a contribution by investigating some variables relate to company ownership structure, namely, blockholders and governmental ownership, which together are the results reveal that the listings of blockholders and governmental owners of Jordanian companies in the ASE has no impact on CR.

The results in summary confirm that leverage to multivariate analysis is associated negatively at 99% level of confidence with CR. The results of the static CR multivariate models confirm that the study that size, growth opportunity (Tobin's q), and (insider, family, foreign ownership) are very strongly positively at 99 % level of confidence associated with CR. But the percentage of blockholders, institution and governmental owners of Jordanian companies in the ASE are not a critical factor in the Jordanian context, except institution is negatively at 95 % level of confidence for first model.

Keywords : *bockholders ownership, governmental ownership.*

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I. INTRODUCTION

According to the current study, the author will depend on secondary data collection, as it is suitable to descriptive and explanatory. The source of this data is the researcher utilise the ASE database. The set of financial information included in the study is taken from firms' financial statements during the period 2005-2007.

Compared with other studies related to investigating ownership structure aspects and the CRs (Bhojraj and Sengupta, 2003; Skafeet al., 2006), albeit for US firms instead, the criteria for selecting the sample of the study are the JSC (Jordan Securities Commission) database for Jordanian firms is used in order to extract data for their ownership structure attributes. The WVB internal and external scores are

used as generously supplied by WVB. Fortunately, for each firm a separate numerical score is also supplied by the rating agency and so, instead of using only an ordered logistic regression model for four categories, I am also able to apply ordinary least squares, which enabled me to capture finer distinctions in the assessments. This is a substantial advantage over many of the previous studies that have been reviewed earlier, for instead of just a couple or several categories, for part of my analysis I utilise hundreds of distinctly separate numerical values for WVB's internal ratings, i.e. those that are not published, as opposed to the published ordinal WVB rating levels, which I also analyse.

II. LITERATURE REVIEW

Jensen and Meckling (1976, p.5) define the agency relationship inside the firm as: "A contract under which one or more person (the principal) engages another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent". The agency problem exists here because the agent does not behave perfectly in the interest of the principal. They describe the agency costs as the sum of monitoring costs by the principal, bonding costs by the agent, and the residual loss which is the reduction in the principal welfare as a result of the differences between the agent's and the principal's decisions. Jensen and Meckling (1976) discuss agency costs as the key tool in evaluating alternative designs of principal-agent relations.

Given the existence of the agency problem (Jensen and Meckling 1976), agency theory is used widely in the credit ratings' literature because of information asymmetry between principal (owners) and (agent) managers. This information asymmetry arises between ownership and management because ownership is distanced from a company's operations, yet at the same time they need managers for the company's business according to the management disciplining hypothesis.

The separation between the two parties (owners and managers) creates an agency problem. The managers seem nearly always to be trying to obtain more benefits from the company. Managers make decisions that increase their self-wealth at the owners' account. This conflict between owners and managers gives rise to agency costs, which are the costs of monitoring the management's behavior in relation to firm

Author : Department of Accounting, Faculty of Economics and Administrative Sciences, The Hashemite University, Jordan.
E-mail : alkwaldhh@yahoo.com

output, arising from contracting between these two parties (Watts, 1977).

Given small differences in categorization classes, prediction of CRs is more complex than the prediction of bankruptcy, and tries to quantify the relationship between financial and industry data and CRs. Studies of bond rating prediction models for at least 40 years have been published, attempting to model agency credit ratings using financial ratios, non financial data, and qualitative information. A wide range of different methodologies has been used, which have evolved and become more sophisticated over time. Like the bankruptcy prediction models presented in the last review, CRs predictor models are vital for assessing and monitoring risk. A number of early studies have developed a statistical model based on historic and publicly available information, which helps in predicting the credit rating and chose either a regression-based approach (Pogue and Soldofsky 1969; West 1970) or multivariate analysis (Horrigan, 1966). These studies assess credit rating applying available financial accounting information to both qualitative and quantitative methods, for example, through the use of a number of financial ratios such as net working capital, long-term debt/assets, and net income/total assets to replicate CRs. The relationship between CR and financial and industry data is widely reported in literature studies, and analyzed through categorical dependent variables through appropriate econometric techniques. Accordingly, Horrigan's (1966) two-step analytical approach was the first and main early study in this area to estimate and determine the characteristics of the bond issuing firms in order to predict their bond rating based on their financial ratios and characteristics of the bond rating. He used ordinary least-squares (OLS) regression on 9 grades of bond ratings with various

combinations of variables, from selected accounting data, to predict the ratings of newly issued bonds as well as any changes in bond rating from 1961-1964. He could explain 65% of variation in the dependent variable and found that total assets had the most significant impact on bond ratings. The result of these predictions was correct for 58% of the Moody's rating and for 52% of Standards and Poor's rating. However, since Horrigan's study there are scores of studies that have extended his initial research using more sophisticated statistical techniques, such as logistic regression model.

III. VARIABLES' MEASUREMENTS

External organisations (e.g. Moody's, Standard and Poor's or Fitch) develop a credit rating for firms so that other interested parties can use these figures to assess a particular firms credit standing. My initial sample is of listed Jordanian firms that were rated by WorldVest Base (WVB) between 2005 and 2007. WVB is selected because of its coverage of Middle Eastern firms. The data for the current study are from these sources: for CRs, the source is World Vest Base and for other variables, the sources are the annual reports made available on the ASE. WVB reports of CRs are assigned a credit assessment score and measure the likelihood of a company failing to honour its commitments 12 months following the calculated CRs. A firm is given a numerical score which is then divided into 20 distinct risk groups based on a firm's eight CRs score. The current study draws upon the long-term CRs according to WVB credit risk ratings for using four groups from classes represented by letters arrayed downwards from BB1 (the best rating) to D (payment is in default-bankruptcy), details of which are given in Table 3-1.

Table 3-1 : WVB Ratings and Numerical Scores

WVB Ratings and numerical scores	Comment
(BB category): when DS > 5.25 and DS <= 5.65 then BB1; when DS > 4.95 and DS <= 5.25 then BB2; when DS > 4.75 and DS <= 4.95 then BB3.	Less near-term vulnerability to default than other speculative issues, however, faces ongoing uncertainties or exposure to adverse business, financial or economic conditions which could lead to inadequate capacity to meet timely interest and/or principal payments.
(B category): when DS > 4.5 and DS <= 4.75 then B1; when DS > 4.15 and DS <= 4.5 then B2; when DS > 3.75 and DS <= 4.15 then B3.	Greater vulnerability to default, but currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the capacity or willingness to pay interest and repay principal. B1="Speculative"; B2="Speculative at best"; B3="very speculative".
(C category): when DS > 3.2 and DS <= 3.75 then C1; when DS > 2.5 and DS <= 3.2 then C2; when DS > 1.75 and DS <= 2.5 then C3.	A current identifiable vulnerability to default and dependent upon favourable business, financial and economic conditions to meet timely payment of interest and repayment of principal. Highly speculative in the event of adverse business, financial or economic conditions, "it is not likely to have the capacity to pay interest and repay principal"=C1; "it is probable the company will not likely have the capacity to pay interest and/or repay principal" =C2; "it is very likely that the company will not have the capacity to pay interest and repay principal" =C3.
(D category): when DS <= 1.75.	Payment is in default, and is technically or actually in bankruptcy.

Source : with adopted <http://www.wvb.com/news/company/view/id/200907131>.

This section discusses the measurement of the independent variables that determine the CRs. The model contains nine continuous variables namely leverage, Growth opportunities, firm size, blockholders ownership, institution ownership, insiders ownership, government ownership, foreign ownership, family ownership.

The proxy firm-specific explanatory variables are included in the rating models based on a survey of prior research on the determinants of corporate credit

ratings variables (e.g., Horrigan, 1966; Kaplan and Urwitz, 1979; Boardman; Lamy and Thompson, 1988; Sengupta 1998; Bhojraj and Sengupta, 2003; Doumpou and Patsiouras 2005; Skafe et al., 2006; and Demirovic and Thomas, 2007). The independent variables were determined by critically reviewing the pertinent literature as outlined in the literature review chapter. Table 3-2 summarises the operationalisation of the independent variables that determine CR.

Table 3- 2 : Measurement of independent variables

Variables	Abbreviation	Description
Leverage	LEV	Total debt divided by total assets.
Growth opportunities	TSQ	Tobin's q
Firm size	SIZE	Natural logarithm of total assets.
Blockholders	BLOCK	% of shareholders who hold 5% or more ownership.
Institution ownership	INST_OWN	% of shares held by institutional investors.
Insider's ownership	INSID_OWN	% of shares held by insiders (managers not directors).
Government ownership	GOV_OWN	% of shareholdings owned by government.
Foreign ownership	FOR_OWN	% of shareholdings owned by foreign.
Family ownership	FAML_OWN	% of shareholdings family owned.

IV. DATA ANALYSIS AND STATISTICAL TECHNIQUES

a) Data Analysis

Determining the nature of the data to be analyzed: the nature of the data either is quantitative or qualitative. Since most of the collected data are numerical, the study will utilize quantitative data analysis in investigating CR in Jordanian listed companies and in testing the relationship between credit rating and corporate characteristics, such as, ownership structure.

Quantifiable data, whose values are measured numerically, this type of data is classified into two sub-types: interval and ratio or continuous and discrete data. If the relative differences between the two data values can be calculated then the data are called ratio data, otherwise they are called interval data. On the other hand, if the data can take any value from the measurement scale they are called continuous data; otherwise, they are called discrete data, when they take only one of a finite number of values from that scale (Saunders, et al., 2007).

b) Statistical Techniques

Many techniques will be used in the current study. Bivariate analysis is used for each independent variable by using parametric and non parametric tests. According to Cooper and Schindler (2008) and Saunders et al., (2007), parametric tests have some assumptions, which the researcher should be aware of, and include: 'the Pearson product moment correlation coefficient (r), to measure the association between all

the dependent variables and the continuous independent variables; the t-test and Levene test, which determine the association between all the dependent variables and any dichotomous independent variables'. The non-parametric test will include: the Spearman's rank correlation which will be performed for the same purpose of Pearson correlation on parametric test. For continuous variables (i.e. firm size, leverage, growth opportunity (Tobin's q), block ownership, institution, insiders, government, family ownership, foreign ownership, correlation coefficients is used. Pearson product-moment correlation (a parametric test) is used when the normality assumption was satisfied, whereas Spearman rank correlation (non-parametric tests) is performed for continuous independent variables, if the assumption of normality is violated.

V. DESCRIPTIVE ANALYSIS

The sample of this study includes all Jordanian listed companies which have CRs from the WVB agency over the period 2005-2007. According to the population of this study, the percentage of Jordanian firms which have a WVB_CR 85% for 2005, 82% for 2006 and 79% for 2007. The CRs of this agency are spread from a minimum of category D to a maximum of category BB. The percentage of Jordanian firms with CRs scores from BB3 to BB is 9.45%, whilst for firms with CRs from B3 to B it is 10.4%, on the other hand 56.45% have CRs from C3 to C but 23.75% have a D credit rating. The mean for all Jordanian firm CRs is C2. It can be observed that a significant minority has a very low rating.

a) Univariate Descriptive Statistics

Table 5-2 shows summary statistics of the independent continuous variables in the study. The first variable is the size (total assets), that averages (median) total assets 42,802,317 JD (16,399,646 JD). Total assets for the sample range from 473,221 to 42,802,317 JD with a high standard deviation of 8.361. Large firms gain from economies of scale and are stronger in facing default risk, enjoy high CRs, have lower risk, are likely to have a good reputation, have more stable future cash flows and face fewer hazards of being liquidated. The average (median) leverage is 31.71% (29.00). Profitable firms are stronger in facing financial distress and continuing in the future than unprofitable firms, and finally the average (median) Tobin's q is 1.60 (1.41).

Tobin's q for the sample ranges from 0.039 to 1.61 with a high standard deviation of 0.751.

There is a substantial mean proportion of blockholders at 57%. The institutional mean shareholding is sizeable at 33%. Indeed agency theory states that the higher the proportion of large institutional investors or greater concentrated ownership, the greater the monitoring role of these investors, and therefore the greater the chance for better financial performance. By contrast, mean shareholding by insiders (officers and directors) is only 5%. There is some indication of family ownership with a mean of 13%, as well as foreign ownership at 10%, and a tiny governmental ownership at 2%.

Table 5-1 : Summary statistics of independent continuous variables

Variables	Mean	S.D.	Max.	Min.	Median.
LEV	.32	.23	1.17	.002	29.00
SIZE	42802317	8.36	664791204	473221	16399646
TSQ	1.61	.75	5.83	.039	1.41
BLOCK_OWN	.57	.227	1.000	000	.58
INST_OWN	.33	.271	1.000	000	.26
INSID_OWN	.05	.108	1.000	000	.004
GOV_OWN	.02	.076	.999	000	.000
FAML_OWN	.13	.168	.79	000	.05
FOREN_OWN	.10	.185	.99	000	.000

Note: LEV = leverage, SIZE = company size, TSQ= Tobin's q, BLOCK_OWN = blockholder ownership, INST_OWN = institutional Ownership, INSID_OWN = insider ownership, GOV_OWN = governmental ownership, FAMILY_OWN = family ownership, FOR_OWN = foreign ownership.

Table 5-2 : Bivariate analysis between CR and continuous variables

Variables	Pearson	Spearman
LEV	.031	.049
SIZE	.438***	.702***
TSQ	.119***	.137***
BLOCK_OWN	.025	.016
INST_OWN	.134***	.165***
INSID_OWN	-.072**	-.010
GOV_OWN	.001	.050
FAML_OWN	.018	.060**
FOREN_OWN	.161***	.252***

Note: *** significant at 1% and ** significant at 5%.

Table 5-2 set out the relationship between the CR score and the pre-specified independent variables for testing Pearson product moment correlation and Spearman's rank order correlation coefficients which are significantly correlated with all variables.

According to the Pearson product moment and spearman rank correlation coefficients, firm size (total assets) and growth opportunity (Tobin's q) are each significantly related to the CR score at 1% level of significance. So, larger firms with better growth

opportunities, which may be considered to be an indicator for the firm's creditworthiness, reflect better CRs, which should encourage investors to lend to these firms with confidence in their stability and future growth opportunities.

Also the table above shows the ownership structure variables, including institution and foreign ownership, which are significantly correlated with CR at the 1% significance level for both Pearson's and Spearman's correlation coefficients. Insider ownership is significant at the 5% level of significance (for the Pearson coefficient) and family ownership at the 5% level of significance (for the Spearman coefficient).

VI. MULTIVARIATE ANALYSIS

a) The Regression Model

As has been mentioned earlier, the availability of continuous numerical credit scores obtained directly from WVB enables more rigorous statistical testing to be undertaken.

The ordinary least squares (OLS) model of the current study can be illustrated as follow:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_9 X_{9i} + \epsilon_i$$

Where:

Y: credit rating (numerical score).

i = number of company.

α = the intercept.

$\beta 1 \dots \beta 21$ = the coefficients of the independent variables.

X1...X21 = the explanatory variables.

ε = the error term.

i. *First Model: Ordinary Least Squares (OLS) Regression*

The first model was run with un-transformed data. The results of this model are explained in the following tables:

Table 6-1 : Untransformed Ordinary Least Squares (U-OLS) model

Variables	Coefficient	t-statistic
LEV	-1.304	-5.310***
SIZE	2.133	17.194***
TSQ	0.207	3.00**
BLOCK OWN	0.450	-1.434
INST OWN	-0.604	-2.089**
INSID OWN	0.142	0.281
GOV OWN	-1.028	1.45
FAML OWN	0.802	2.223**
FOREN OWN	0.627	2.062**
Constant	-13.00	-14.2***
F-Ratio	28.22	
Adjusted R-square	49.8	

Note: *** significant at 1%, ** significant at 5%, * significant at 10%.

ii. *Second Model*

As explained earlier, non-linearity between independent and dependent variables can cause too much positive or negative clustering of residuals. By transforming some variables, typically through log transforms, this potential problem can be much reduced. This model incorporates transformed data for variables-measurement. The results of this model are explained in the following tables:

Table 6-2 : Transformed Ordinary Least Squares (T-OLS) model

Variables	Coefficient	t-statistic
LEV	-1.766	-6.187***
SIZE	2.991	20.963***
TSQ	0.307	3.788***
BLOCK OWN	-0.116	-0.379
INST OWN	0.083	1.363
INSID OWN	2.534	4.224***
GOV OWN	-0.224	-1.256
FAML OWN	1.132	2.961***
FOREN OWN	1.206	3.368***
Constant	-21.00	-22.00***
F-Ratio	41.78	
Adjusted R-square	59.9	

Note: *** significant at 1%, ** significant at 5%, * significant at 10%.

As indicated from Tables 6.1 and 6.2, the adjusted R-squares were around 50% for untransformed data, which improved to around 60% for the transformed data, comparable with previous studies. That (Horrigan 1966; Thomas et al., 1967; and Skaife et al., 2006) had R-squares of 48%, 56%, 60% adjusted R-square of the model of the current study is acceptable.

According to the continues variable, just leverage have a significant relationship at a level of 1% significance, respectively, with CR, respectively. Leverage is important determinants of WVB credit risk assessment in descending order.

Firm size and growth opportunities variables in both models were found to be significant, the findings providing evidence for the influence of these variables on CR, and represent firm size and growth opportunities, which are associated and positively significant at the level 1% of in both models, except at 5% level of significance for growth opportunities in the first model with CR. This implies that firm size and growth opportunities have a role to play in the determination of WVB credit risk assessments.

As to the ownership structure category, four out of six variables were found to have an impact on the CR in one or both models. For the un-transformed first model, institution, family and foreign ownerships bear a significant relationship with CR at the 5% level of significance, while insider, family, and foreign ownership of the transformed (second) model bear a significance relationship with CR at the 1% level of significance.

VII. DISCUSSION OF THE OLS RESULTS

As in the previous section, the untransformed and transformed models are used for this analysis. The focus here is on the significance of the variables that influence the CR, discussed according to the different groups of explanatory variables.

Three control variables have been introduced in the current study to examine their impact on CR. As indicated in above section, three variables have been found to have a strong relationship with CR. The reason for finding a potentially significant association between any independent and dependent variables in the multivariate analysis which not appear in the bivariate analysis is due to the possible impact of the combination of other variables in the multivariate analysis (OLS) on the significance of this variable. On the other hand, when a significant association appears in the bivariate analysis which is not in the multivariate analysis, this may be due to the multicollinearity (even if minor) between the independent variables which explain the lack of significance of this variable (Hosain et al., 1994).

Where there are differences between the findings of bivariate and multivariate analyses regarding some variables, the emphasis will be given to the multivariate analysis for the determinants of CR in the Jordanian context by examining groups of variables simultaneously.

Multivariate analyses have supported the influence of leverage on the Jordanian listed companies' CR being significantly negatively related to CR at the 99 per cent level of confidence and as expected, there is a clear inverse relationship between financial risk, as evidenced by the relative debt level, and the firm's CR. Based on the above discussion overall, it can be noticed that the control category of selected variables nevertheless is associated with CR.

It can be seen that all the control variables have a significant impact on CR at the presented levels and mainly at the 99% level of confidence in both bivariate and multivariate analyses.

The results of the bivariate and multivariate analyses reveal a positive relationship between the firm's size and CR. All these results are statistically significant at the 99% level of confidence. The results show that larger the size of the total assets of Jordanian listed companies is an important criterion in determining a higher CR. This supports the signalling theory, which assumes that large firms are stronger when facing bankruptcy and financial distress through the creation of future cash flows to the firm. Thus, there is an incentive for larger companies to attain higher CRs since this should reduce the cost of capital on account of the lower perceived credit risk there. In addition, for most of these large companies the benefits of high CRs should be reflected in the provision of provide future cash flows to all stakeholders, including bondholders.

Tobin's q (TSQ) is a proxy used to measure the growth opportunities. The results of bivariate and multivariate analyses are highly significant, namely, at the 99% level of confidence. Concerning this growth potential variable, both bivariate and multivariate analyses indicate that Jordanian listed companies with higher growth potential generally have higher CRs as reflected in the positive relationship between the firm's CR and growth opportunities. This positive and significant effect gives support to the argument of signalling theory, which is undervalued on plainly unrecorded. Companies with high growth may signal that to their investors to illustrate their high expected performance which should result in their higher future profits, consequently attracting a higher CR. Also, firms with greater growth opportunities might have lower leverage ratios enabling firms to reduce expensive default risk and reduce the risk of expropriation of wealth to shareholders from bondholders. Indeed, the correlation between growth opportunities and leverage is negative (-.074) although the multicollinearity is not an issue for this data-set.

Six different aspects structures of ownership structure are examined in the current study to investigate their impact on CR in the Jordanian context. As indicated in analysis result, multivariate and bivariate analyses report that several ownership structure variables have a strong influence on the Jordanian listed CR. Yet, foreign ownership is the only ownership structure variable that has identical results from both bivariate and multivariate analyses. The statistic results reveal that there is a positive relationship between the foreign ownership of the Jordanian listed companies and CR at a confidence level of 99 %. Bivariate analysis finds this association at level significance of 1%, while untransformed and log transformation models find it at a significance level of 5%, and 1% respectively. This reveals that the existence of foreign ownership of Jordanian listed companies has a strong influence on the level of CR.

Supportive of legitimacy theory, the influence of foreign ownership in Jordanian companies may push firms to seek ways to enhance their CRs as an information tool by providing stakeholders with greater security in the firm's ability to cover future debt through obligations future cash flows to legitimate themselves above rival companies.

The findings of the current study are supported by Aydin et al (2007), who find a significant association between foreign ownership and firm performance. Thus, this role should be more prominent through greater foreign ownership in the Jordanian listed companies.

Pertaining to institutional ownership both bivariate and multivariate regression analyses demonstrate on association with CR in the Jordanian context but at different levels of significance; bivariate showing a positive significance at the 99% level of confidence, and a negative significance at the 95% level of confidence for the multivariate analysis, namely, for U_OLS. Institutional ownership can be a threat to creditor's interests as this class of shareholders can expend enormous energy on blocking debt holder benefits. The multivariate (U_OLS) analysis suggests that a lower institutional ownership is beneficial from a creditor's point of view; so there may be an optimum level of institutional ownership which balances the costs and benefits associated with more shareholder control.

Only multivariate analysis reports significant positive relationship between family ownership and CR of the Jordanian listed companies at 95% and 99% confidence levels for each model, respectively. Stewardship theory supports this result, whereby management and family ownership should lead to corporate success (Davis, Schoorman and Donaldson, 1997), as family owners have inside knowledge about their business, which gives them an edge in running their business profitably, as Westhead (2003) explains, they are part of the management and have a vested interest in the company's success, they will act as

stewards to ensure that there is continued success, and will work to solve organizational problems and take on tasks to fulfil business goals.

Thus, higher family ownership firms have better CRs reflecting their firms' ability to create more than sufficient future cash flows to cover debt interest and capital repayments. These findings demonstrate that for Jordanian listed companies there is a key role played by family owners in enhancing the creditworthiness of companies. Also, legitimacy and stakeholder theories can explain this positive relationship. Family ownership may help attain higher CRs to avoid both litigation and reputation costs resulting from lower creditworthiness. Further, these companies are in the public eye and therefore, should enhance their communication with various stakeholders and legitimize themselves by attaining higher CRs. Finally, family ownership may be enforced by different stakeholders to provide a higher CR as evidence of the ability of these firms to cover capital repayments through the generation of future cash flows to mitigate any bad effect otherwise resulting from a reduced need for family owners to press for greater accounting disclosure because of their inside knowledge.

Both bivariate and multivariate regression analyses show disagreement in the results of insider ownership by managers and other corporate officers. Only multivariate analysis reports a strong positive relationship between insider ownership and CR of the Jordanian listed companies at a significant level of 99% confidence. The multivariate findings demonstrate that Jordanian listed companies with a higher proportion of insider ownership can attain a higher CR. On the other hand, bivariate analyses show a negative relationship between insider ownership and CR at the 95% confidence level. These empirical findings may be attributed to both signalling and stewardship theories. A higher proportion of insider ownership of Jordanian companies may attract higher CRs to signal their good performance and secure creditworthiness, which anticipates higher liquidity for these companies and strong future cash flows. According to stewardship theory, higher managerial ownership can help prevent the misuse of shareholders' wealth, due to a convergence in interests between them, supporting a higher CR.

No empirical evidence, based on both bivariate and multivariate analyses, in the current study has been found to support the relationship between CR and either the Jordanian listed company's blockholders or governmental ownership. This means that Jordanian listed companies with a lower proportion of governmental ownership do not necessarily decrease their level of CR. Skaife et al (2006) hypothesized neither a positive or negative effect for blockholders although they reported a negative effect for their sample of US firms. In case of a high proportion of

governmental ownership, governmental owners have the authority to access the required information without the need of CR reports. Therefore, Jordanian listed companies with a higher proportion of governmental ownership do not need CRs, as the required information is available internally, and vice versa. Therefore, there will be no conflict between the shareholders and management, which can reduce the agency problem in this case, and hence reduce the level of credit ratings.

VIII. CONCLUSION

According to the Jordanian government commitment to the WTO, the Jordanian government has commenced a process of comprehensive economic reform. Consequently, Jordanian listed companies are required to attract more investors through achieve higher score of CR.

This paper investigated the relationship between blockholders and governmental owner variables and credit ratings; this relationship has been analysed by nine variables namely, (LEV, SIZE, and Tobin's q, BLOCK-OWN, INST-OWN, INSID-OWN, GOV-OWN, FAML-OWN and FOR-OWN) as independent variable.

The results in summary confirm that leverage to both models and governmental ownership to multivariate analysis are associated negatively at 99% level of confidence with CR, size, growth opportunity (Tobin's q), foreign ownership, family ownership and insider ownership are very strongly positively at 99 % level of confidence associated with CR to second model, but there are strongly positively at 95 percentage level of confidence associated with CR to first model except firm size is positively at 99 % to both models, but inside and governmental ownership are not a critical % of confidence for first model.

The results of the static CR multivariate models confirm that the study that institutional ownership is negatively strongly related to CR at 95 % level of confidence, but at 90 % level of confidence for first model, but the percentage of institution ownership is not a critical factor in the Jordanian context.

To summarise, the results reveal that the listings of blockholders and governmental owners of Jordanian companies in the ASE has no impact on CR.

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Domestic and Foreign Financial Market Reaction to the Impact of the Bank of Japan's Financial Policy

By Dr. Yutaka Kurihara

Archi University, Japan

Abstract - This article examines the impact of news about the Bank of Japan's financial policy regarding the Japanese yen and U.S. dollar interest rates. In general, whether or not the news announcements from the financial authorities impact their own markets is related to the successful conduct of their policies. In Japan, a zero/low interest rate or quantitative easing policy has been conducted under severe economic conditions to combat deflation and recession for almost 10 years, so there is some possibility that evident changes in interest rates do not occur. Also, there is no consensus about effectiveness of new announcements. Empirical results show recent significant impact of the Bank of Japan announcements on not only Japanese interest rates but also on those of United States. These results have contributed to the recent success of financial policy in Japan.

Keywords : *central bank; financial policy; interest rate; news announcement.*

GJMBR Classification : *JEL Code: 900102, 350399*



DOMESTIC AND FOREIGN FINANCIAL MARKET REACTION TO THE IMPACT OF THE BANK OF JAPANS FINANCIAL POLICY

Strictly as per the compliance and regulations of:



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Abstract - This article examines the impact of news about the Bank of Japan's financial policy regarding the Japanese yen and U.S. dollar interest rates. In general, whether or not the news announcements from the financial authorities impact their own markets is related to the successful conduct of their policies. In Japan, a zero/low interest rate or quantitative easing policy has been conducted under severe economic conditions to combat deflation and recession for almost 10 years, so there is some possibility that evident changes in interest rates do not occur. Also, there is no consensus about effectiveness of new announcements. Empirical results show recent significant impact of the Bank of Japan announcements on not only Japanese interest rates but also on those of United States. These results have contributed to the recent success of financial policy in Japan.

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I. INTRODUCTION

A large number of studies have been published about the reactions of money market interest rates to financial policy announcements. The impact of central banks' financial policies on markets, especially on interest rates, relates to the successful impact and effectiveness of the financial policies. Effective central bank communication should ensure that financial markets understand the central bank's interest rate policy; that is, how interest rates are linked to future inflation and output (Schmidt and Nautz, 2012).

Rudensbusch(1998), Kuttner(2001), Poole et al. (2002), Belke and Gros(2005), Thornton (2007), Hamilton (2008), Piazzesi and Swanson (2008), Beechey(2009), Valente (2009), and Berger and Nitsch(2011) have provided theoretical and empirical results for this question.

This article examines the impact of financial policy news announcements on interest rates in Japan and the United States. Some articles have been published on this issue about the U.S. and some European financial markets.

Romer and Romer (2000) analyzed the case of the United States. Kevin and Auerbach (2010) examined the effects of macroeconomic news announcements

from the Federal Reserve System (the Fed) and European Central Bank (ECB) on exchange rates. Syed (2010) examined the effects of financial policy actions from macroeconomic news announcements by the FED and ECB on domestic stock prices. Recently, Komain (2012) and Techarongrojwong (2012) provided evidence of risk spillovers in the stock and foreign exchange markets in emerging countries. Leon and Williams (2012), employing a matched-sample test of before-and after-intervention events, showed that the sterilized interventions were effective. Simwaka and Mkandawire (2012) showed that intervention can only have a temporary influence on exchange rates. Reitz and Taylor (2012) provided support for the coordination of foreign exchange market interventions. However, few studies have examined the case of Japanese financial policy and its impact on Japanese financial markets.

Woodford (2010) proposed ways to include the conduct of financial policy in the forecasts of interest rates as the FED's communication method. Thornton (2009) and Monticini et al. (2011) showed that estimations of the relationship between interest rates and future interest rates based on the news from days when central bank news announcements are made leads to bias. These articles showed that interest rates and market-based measures of financial policy news respond simultaneously to all news and not just to news in financial policy announcements. Other articles have focused on these issues. However, there has been no consensus on this matter.

In Japan, a zero or low interest rate policy has been enacted. Kim and Le (2010) and Kurihara (2011) examined the effectiveness of intraday financial policies of the Bank of Japan (BOJ; i.e., the Japanese central bank). Also, after the subprime problems in 2007 and the Lehman shock in 2008, a huge amount of capital has flowed into the Japanese financial markets and Swiss franc markets in spite of the fact that the Japanese economy has not been in good condition in more than 20 years. Moreover, complex and unexpected movements are recently ongoing in the Japanese financial markets. The linkage among countries has become continuous. In this situation, one can expect that it is difficult for financial policy to

Author : Facility of Economics, Archi university, Japan.
E-mail : kurihara@vega.aichi-u.ac.jp

overcome deflation and recession and achieve economic growth.

This article uses the method of Thornton (2009) and Monticini et al. (2011) to investigate the impact of news from the BOJ not only on the Japanese yen but also on U.S. dollar interest rates. The paper is organized as follows. The next section shows theoretical analysis. Section III demonstrates empirical methods and data used here. Section IV shows the results and analyzes them. Finally, this article ends with a summary.

II. THEORETICAL ANALYSIS AND EMPIRICAL METHOD

In this section, a theoretical model that analyzes the impact of the central bank news announcements on interest rates is postulated. In general, financial policy announcements influence financial markets, especially interest rates in a short time, for example, at the moment of the announcement or on the same day. Given same-day or short-term effects, however, the standard approach is to measure the response of interest rates to unanticipated financial policy. Moreover, future forecasts of economic variables are influenced and formed by financial policy.

The idea employed here is based on Monticini (2011). The method is to compute the difference that should capture the news of the financial policy announcement given the assumption of market efficiency. Future price (N) at time $t-1$ is the conditional expectation of the spot price (r) at the maturity date (m) based on the information (I) at time $t-1$. According to this idea, it might be appropriate to employ this method.

$$E[r_m|I_{t-1}] = N_{m,t-1} \quad (1)$$

News generated about financial policy announcements are given by a one-time day change in the conditional expectation.

$$\Delta N_t = E[r_m|I_t] - E[r_m|I_{t-1}] = N_{m,t} - N_{m,t-1} \quad (2)$$

It should be noted that the market-based measures of financial policy news respond to all news about financial policy actions. Kurihara (2011) empirically examined, however, empirical methods and some explanation variables are different. The next section shows the empirical method for analyzing the impact of the BOJ financial policy news announcements on the Japanese yen and U.S. dollar interest rates.

III. EMPIRICAL ANALYSIS

a) Recent Japanese Financial Policy

In the 1990s, Japan experienced serious economic and financial crises after the bubble economy (large increases in stock and land prices) burst in the late 1980s. To overcome these severe economic situations, the BOJ adopted the zero interest rate policy from February 1999 to August 2000. That is, the BOJ

decided to “flexibly provide ample funds and encourage the uncollateralized overnight call rate to move as low as possible”.

The zero interest rate policy contributed to economic recovery. The BOJ stopped the zero interest rate policy. However, the economy became bad again after that. The BOJ then conducted a more aggressive financial easing policy. That is, on March 19, 2001, the BOJ decided to increase the outstanding balance of the current accounts at the Bank. This is called a quantitative easing policy. The main operating target for financial market operations changed from the uncollateralized overnight call rate to the outstanding balance of the current account at the Bank. The target of the current account balance has been increased several times since then.

When a favourable sign occurred in the Japanese economy, the outstanding balance of current accounts at the BOJ was reduced toward the level of required reserves on March 9, 2006. However, to overcome deflation and to help the Japanese economy attain sustainable growth with price stability, the BOJ continues to make contributions by using a three-pronged approach of powerful financial easing: (1) enact comprehensive financial easing, (2) ensure financial market stability, and (3) provide support to strengthen the foundations for economic growth.

Since the big earthquake in March 11, 2011, the BOJ has been taking measures that focus on three major points: (1) maintaining the functioning of financial and settlement systems, (2) ensuring the stability of financial markets, and (3) supporting economic activity. In addition to these measures, the BOJ decided to engage in a funds-supplying operation to support financial institutions. The BOJ also decided to expand the range of eligible collateral for market operations to ensure that financial institutions in the disaster areas would have sufficient financing capacity.

b) Empirical Methods

In section II, some empirical tests are performed using daily data (Nikkei NEEDS). The sample period is from 1997 to 2012. The period is divided into three: (1) before the quantitative easing period (January 1, 1997–March 18, 2001), (2) the quantitative easing period (March 19, 2001–March 9, 2006), and (3) after the quantitative easing period (March 10, 2006–November 30, 2012). Future interest rates are for six months. Lamla and Lein (2011) found that the ECB affects financial markets: communication drives maturities greater than four months. To estimate the impact of the BOJ announcements on the Japanese yen and U.S. dollar, equations (3) and (4) are used for empirical analysis. Knütter and Wagner (2011) noted that globalization makes the strategy for reactive financial policy the favourable option in the situations, related to inflation targeting in the United States. Also,

the coordination channel has recently been established as an additional means by which foreign exchange market intervention maybe effective. However, no study has analyzed the case of Japan. The following empirical test is performed with the division of the sample period according to the policy change and globalization.

The empirical method is generalized method of moments (GMM), which is a robust estimator in that, unlike maximum likelihood estimation, GMM does not require information about the exact distribution of the disturbances. Hansen's J statistics test is also performed. This test checks whether or not the model's moment matches the data. In a GMM context, when there are more moment conditions than parameters to

be estimated, this chi-square test can be used to test the over-identifying restrictions.

Also, this article employs the generalized autoregressive conditional heteroskedasticity (GARCH) model to examine the effect of Bank of Japan's financial policy. GARCH is designed to model and forecast conditional variances. The variance of the dependent variable is modelled as a function of past values of the dependent variable and independent or exogenous variables. To control other activity of the central bank that do affect interest rate, the expectation of exchange rate (EXPECT) is included in the equations. It is assumed to be the same as the real value in the future (5 days after the announcement).

$$\Delta R_t^{Yen} = \alpha_0 + \alpha_1 announcement + \alpha_2 announcement * \Delta N_t + \alpha_3 \Delta N_t + \alpha_4 \Delta R_{t-1}^{Yen} + \varepsilon_t \quad (3)$$

$$\Delta R_t^{USD} = \alpha_0 + \alpha_1 announcement + \alpha_2 announcement * \Delta N_t + \alpha_3 \Delta N_t + \alpha_4 \Delta R_{t-1}^{USD} + \varepsilon \quad (4)$$

Where ΔR_t^{Yen} and ΔR_t^{USD} are the change in each currency's interest rates (interbank rates). $\Delta N_t = E[r_m/I_t] - E[r_m/I_{t-1}] = N_{m,t} - N_{m,t-1}$ is the futures measure of news. *Announcement* in these equations is a 1 or 0 dummy variable that is equal to one on days of the

BOJ's announcements and zero otherwise. It should be noted that the measure of news, ΔN_t , occurred on all days to avoid possible bias in estimates of the BOJ news as well as an intercept shift on the announcement days. Finally, ε_t is the error term.

c) Results

The results are reported in Table 1a (GMM) and 1b (GARCH).

Table 1a : Estimated Results for Equations (3), (4), and (5)(GMM)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	D.W.	Adj.R ²
Before								
(3)	-0.000 (0.80)	-0.003 (0.80)	-0.76 (0.74)	-0.004 (0.12)	-0.23 (3.41E-08)	3.62	1.77	0.34
(4)	-0.000 (0.65)	0.008 (0.67)	-0.25 (0.79)	-0.001 (0.20)	-0.31 (4.65E-07)	3.65	1.70	0.29
During								
(3)	-0.000 (0.55)	-0.005 (0.14)	-0.12 (0.96)	0.03 (0.07)	-0.36 (2.90-29)	3.22	1.50	0.41
(4)	-0.000 (0.62)	-0.005 (0.90)	-0.72 (0.83)	-0.002 (0.16)	-0.25 (3.94-09)	3.12	1.36	0.40
After								
(3)	0.000 (0.85)	-0.008 (0.30)	-16.80 (0.005)	0.06 (0.08)	-0.16 (1.08E-10)	4.08	1.84	0.55
(4)	-0.0004 (0.84)	-0.16 (1.30E-07)	268.22 (1.37E-15)	0.05 (0.08)	0.44 (0.02)	3.35	1.70	0.54

Note : Numbers in parentheses are p -values. The Chow test rejects the null of no structural break at the 5% level.

Table 1b : Estimated Results for Equations (3), (4), and (5)(GARCH)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	EXPECT	D.W.	Adj.R ²
Before									
(3)	-0.000 (0.80)	-0.003 (0.79)	-0.75 (0.74)	-0.004 (0.11)	-0.23 (3.40E-08)	3.63	-0.005 (0.13)	1.77	0.34
(4)	-0.000 (0.66)	0.008 (0.66)	-0.25 (0.78)	-0.001 (0.20)	-0.30 (4.65E-07)	3.65	0.008 (0.65)	1.71	0.29
During									
(3)	-0.000 (0.54)	-0.004 (0.14)	-0.12 (0.95)	0.03 (0.07)	-0.37 (2.91-29)	3.22	-0.003 (0.13)	1.50	0.40

(4)	-0.000 (0.61)	-0.005 (0.89)	-0.72 (0.83)	-0.002 (0.15)	-0.25 (3.92-09)	3.13	0.002 (0.57)	1.36	0.41
After									
(3)	0.000 (0.84)	-0.008 (0.31)	-16.81 (0.004)	0.06 (0.08)	-0.14 (1.10E-10)	4.08	-0.002 (0.08)	1.88	0.60
(4)	-0.0004 (0.83)	-0.1 (1.30E-07)	268.20 (1.36E-15)	0.05 (0.08)	0.43 (0.02)	3.34	0.001 (0.66)	1.69	0.54

Note : Numbers in parentheses are p -values. The Chow test rejects the null of no structural break at the 5% level. Tables 2a and 2b report on the 5 days following the announcements. The empirical methods are GMM (Table 2a) and GARCH (Table 2b).

Table 2a : Estimated Results for Equations (3), (4), and (5) (GMM)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	D.W.	Adj.R ²
Before								
(3)	0.008 (0.91)	-0.002 (0.88)	-0.72 (0.70)	-0.001 (0.13)	-0.20 (3.12E-08)	3.45	1.72	0.31
(4)	-0.002 (0.63)	0.009 (0.59)	-0.22 (0.86)	-0.001 (0.16)	-0.30 (4.69E-08)	3.61	1.68	0.26
During								
(3)	-0.000 (0.50)	-0.006 (0.13)	-0.10 (0.92)	0.03 (0.06)	-0.29 (2.95-30)	3.24	1.51	0.45
(4)	-0.000 (0.59)	-0.004 (0.91)	-0.73 (0.84)	-0.002 (0.15)	-0.22 (3.84-09)	3.13	1.39	0.41
(5)	-0.000 (0.55)	-0.004 (0.85)	-0.82 (0.84)	0.000 (0.16)	-0.23 (3.01-08)	3.24	1.83	0.42
After								
(3)	0.000 (0.82)	-0.007 (0.29)	-16.82 (0.004)	0.06 (0.07)	-0.15 (1.09E-11)	4.10	1.86	0.56
(4)	- 0.0004 (0.86)	-0.16 (1.15E-06)	159.91 (1.40E-15)	0.05 (0.07)	0.45 (0.04)	3.39	1.74	0.56

Note : Numbers in parentheses are p -values. The Chow test rejects the null of no structural break at the 5% level.

Table 2b : Estimated Results for Equations (3), (4), and (5) (GARCH)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	EXPECT	D.W.	Adj.R ²
Before									
(3)	0.007 (0.90)	-0.002 (0.87)	-0.72 (0.71)	- 0.001 (0.13)	-0.20 (3.11E-08)	3.43	-0.005 (0.14)	1.71	0.31
(4)	-0.001 (0.61)	0.009 (0.58)	-0.23 (0.86)	- 0.001 (0.16)	-0.30 (4.67E-08)	3.59	0.007 (0.66)	1.68	0.27
During									
(3)	-0.000 (0.48)	-0.006 (0.14)	-0.10 (0.92)	0.03 (0.05)	-0.28 (2.93-30)	3.24	-0.002 (0.12)	1.52	0.46
(4)	-0.000 (0.57)	-0.004 (0.91)	-0.73 (0.83)	- 0.001 (0.15)	-0.22 (3.81-09)	3.13	0.002 (0.58)	1.38	0.44
(5)	-0.000 (0.55)	-0.004 (0.83)	-0.81 (0.83)	0.000 (0.16)	-0.25 (3.00-08)	3.24	0.003 (0.58)	1.83	0.41

After									
(3)	0.000 (0.80)	-0.007 (0.27)	-16.85 (0.004)	0.06 (0.07)	-0.13 (1.09E-11)	4.07	-0.002 (0.08)	1.87	0.56
(4)	- 0.0004 (0.87)	-0.13 (1.11E-06)	159.91 (1.40E-15)	0.05 (0.07)	0.43 (0.04)	3.35	0.001 (0.66)	1.74	0.54

Note : Numbers in parentheses are p -values. The Chow test rejects the null of no structural break at the 5% level.

First, the BOJ's recent news announcements are significant in spite of the fact that interest rates have been quite low. The announcements impact not only domestic markets but also U.S. markets. The existence of a statistically significant response of financial market interest rate appears to be a result of the predictability of the interest rate change. On the other hand, before the quantitative policy period, it would appear that BOJ news announcements had no significant effect on U.S. interest rates. Of course, the BOJ did not intend to influence interest rates in other countries, which is beyond the role of the BOJ. However, considering the greater integration of financial markets internationally, the results should be predictable and are important to consider.

Second, the results of one day time lag's case (Tables 1a and 1b) fit better than the ones for 5 days after the announcement. The coefficients of 5 days are smaller than those for one-day lags in general. Jones et al. (1998) suggested that the release of news information can result in a volatility shock that persists beyond the date of the announcement. Marshall et al. (2012) showed that the persistence to the market might occur because of to the clustering of information arrivals, market sentiment, or gradual learning. Bauwens et al. (2005) showed that post announcement volatility can be attributed to heterogeneity of interpretations of the news content that can lead to delayed surprise reactions and closing of positions based on prior anticipations. However, this article showed that the ability of current misalignments to signal shifts might exist but may be diminished.

Finally, is little difference between GMM and GARCH. However, the results are not very conclusive.

IV. CONCLUSIONS

This article provides empirical evidence that the BOJ's recent news announcements have significant impact on interest rates not only Japan but also in the United States. Regardless of the low or almost zero interest rates in Japan and the strange phenomenon that the yen appreciates greatly in spite of the recession and the large accumulated debt in Japan, financial markets have responded effectively to the BOJ's policy announcements. Of course, market participants sometimes misperceive future interest rates or market conditions. However, central bank communication has surely been improved.

Other empirical methods and analyses are necessary. Madura and Tucker (1992) and Aggarwal and Schirm (1998) showed asymmetry on the volatility of foreign exchange rate reactions to the announcements of policy information. Kuttner (2001) noted that changes in the overnight rate affect longer term rates only to the extent that they lead to revisions in expectations of future overnight rates; the more persistent the change, the larger the effect on expectations, and mean revision in the short-term interest rate provides smaller responses for bonds that are longer out of the yield curve. Moreover, as suggested by Beechey (2009), empirically, financial policy announcement can change real interest rates, inflation expectations, and inflation risk premium, and the effects can cancel each other out. Marshall et al. (2012) showed that some macroeconomic impact on foreign exchange implies volatility. They suggested that market participants with extremely high levels of volatility were associated with the market laws and therefore signal attractive entry levels for some traders.

Silvia and Iqbal (2011) suggested that financial and fiscal policies have a stable, short- and long-run relationship with economic confidence and real GDP. Siregar and Lim (2010) showed that countercyclical and macro prudential regulations are needed to attain sound economic growth. Suardi and Chang (2012) showed that purchases and sales of U.S. dollars interventions produced correlation asymmetry in the United States but not in Japan and Germany. Some additional facts may have to be taken into account. Further research is needed in this field.

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E-Business and Supply Chain Collaboration

By Mr. Asad Ullah

Aligarh Muslim University, India

Abstract - E-Business and Supply Chain Collaboration

E-business - the use of Internet-based computing and communications to execute both front-end and back-end business processes - has emerged as a key enabler to drive supply chain integration. Businesses can use the Internet to gain global visibility across their extended network of trading partners and help them respond quickly to a range of variables, from customer demand to resource shortages.

This Paper examines the impact of e-business on supply chain integration, with particular emphasis on four key areas: *information sharing*, *synchronized planning*, *workflow coordination*, and the evolution of *new business models*. It offers real-world examples of how companies large and small have adopted e-business approaches to achieve the significant benefits of supply chain integration. It illustrates the power of e-business with examples of innovative technology solutions. Finally, it discusses how cross-supply chain performance monitoring will be a critical success factor in achieving the advantages inherent in supply chain integration.

GJMBR Classification : JEL Code: 350202



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This Paper examines the impact of e-business on supply chain integration, with particular emphasis on four key areas: *information sharing, synchronized planning, workflow coordination, and the evolution of new business models*. It offers real-world examples of how companies large and small have adopted e-business approaches to achieve the significant benefits of supply chain integration. It illustrates the power of e-business with examples of innovative technology solutions. Finally, it discusses how cross-supply chain performance monitoring will be a critical success factor in achieving the advantages inherent in supply chain integration.

I. INTRODUCTION

Over the past decade a combination of economic, technology and market forces has compelled companies to examine and reinvent their supply chain strategies. Some of these forces include the globalization of businesses, the proliferation of product variety, increasing complexity of supply networks, and the shortening of the product life cycles. To stay competitive, enlightened companies have strived to achieve greater coordination and collaboration among supply chain partners in an approach called "supply chain integration."

Information technology, and in particular, the Internet, play a key role in furthering the goals of supply chain integration. While the most visible manifestation of the Internet has been in the emergence of electronic commerce as a new retail channel, it is likely that the Internet will have an even more profound impact on business-to-business interaction, especially in the area of supply chain integration. The Internet can redefine how back-end operations — product design and development, procurement, production, inventory, distribution, after-sales service support, and even marketing — are conducted, and in the process alter the roles and relationships of various parties, fostering new supply networks, services and business models. The term "e-business"— as distinct from "e-commerce"— can be used to describe this exciting adoption of the

Internet to accelerate the goal of supply chain integration. In this context, e-business specifically refers to "*the planning and execution of the frontend and back-end operations in a supply chain using the Internet.*"

In fact, e-business has already had a significant impact on supply chain integration, but it is safe to say that we have only scratched the surface. New models are continuously being developed. By adopting e-business approaches for supply chain integration, companies can realize dramatic returns through efficiency improvements, better asset utilization, faster time to market, reduction in total order fulfillment times, enhanced customer service and responsiveness, penetrating new markets, higher return on assets, and ultimately, higher shareholder value.

II. SUPPLY CHAIN COLLABORATION AND E-BUSINESS

Virtual integration is to use technology and information to blur the traditional boundaries among suppliers, manufacturers, distributors, and end users in a supply chain. Today, the virtual corporation of various firms in a supply chain is a reality with suppliers and customer trading over the Internet in real-time to create maximum value. Virtual integration offers the advantage of tightly coordinated supply chain that has traditionally come through vertical integration. In the age of virtual organizations, managers, engineers, professional staff, and technical workers are no longer the lone custodians of the corporate knowledge base. Knowledge is shared across cultural-boundaries, time-boundaries, and space-boundaries to create strategic frontiers in global and virtual enterprises.

A seamless virtual integration of firms within a supply chain requires real-time automation of inter-organization business processes that span across trading partners. In the last decade, organizations involved in a supply chain use e-mail, faxes, and voice mail. These practices introduce delays and often require data to be re-entered multiple times. In 1997, American companies spent \$862 billion, or approximately 10 percent of GNP, on supply related activities. This includes the movement of materials, storage, and control of products across the supply chain. During the late 90s of last century, productivity surged from 1.5% in earlier years to 2.5%. The increase in productivity in the late 90s is a direct result of computer technology.

The traditional arm's length transaction from one stage of supply chain to the next is illustrated in Figure 1.1(a). Organizations view their suppliers and

Author : Research Scholar, in the Department of Business Administration, Aligarh Muslim University, India.
E-mail : asad_hazari@yahoo.com

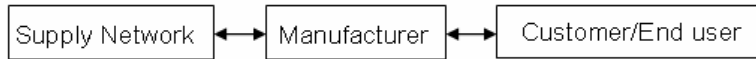
customers as adversaries who are not to be trusted. This prevents entry into successful long-term relationships. Performance is often narrowly viewed and

procurement decisions are often based solely on price. Relationships are viewed in terms of a zero-sum game where there is a clear winner and a clear loser.

(a) Supply chain model: a value chain with arm's length transactions from one layer to the next



(b) Dell's direct supply chain model: forge partnership with suppliers and eliminate third-party distribution



(c) Virtual integration: works faster by blurring the traditional boundaries and roles in the value chain

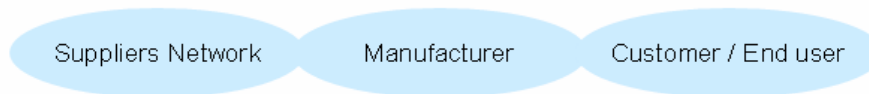


Figure 1.1 : Supply chain in e-Biz environment

The integrated supply chain model that Dell Inc. creates is illustrated in Figure 1.1 (b). This model focuses on mutual trust and respect of supply chain members, just-in-time manufacturing, and eliminating third-party retailers. With this integrated supply chain, Dell only holds five days of inventory, and has a build cycle of two days on most systems. The integrated supply chain includes joint improvement projects,

training seminars, workshops, and meetings between organizations' top management. As the degree of communication increases between customers and suppliers, higher levels of informal information sharing are witnessed.

A step ahead of integrated supply chain is virtual integration, which blurs the walls of supply chain organizations as illustrated in Figure 1.1(c). The trend of

Table 1 : Supply Chain Integration Dimensions

Dimensions	Elements	Benefits
Information Integration	☐ Information sharing & transparency ☐ Direct & real-time accessibility	☐ Reduced bullwhip effect ☐ Early problem detection ☐ Faster response ☐ Trust building
Synchronised planning	☐ Collaborative planning, forecasting & replenishment ☐ Joint design	☐ Reduced bullwhip effect ☐ Lower cost ☐ Optimized capacity utilization ☐ Improved service
Workflow Coordination	☐ Coordinated production planning & operations, procurement, order processing, engineering change & design ☐ Integrated, automated business processes	☐ Efficiency & accuracy gains ☐ Fast response ☐ Improved service ☐ Earlier time to market ☐ Expanded network
New Business Models	☐ Virtual resources ☐ Logistics restructuring ☐ Mass customization ☐ New services ☐ Click-and-mortar models	☐ Virtual resources ☐ Logistics restructuring ☐ Mass customization ☐ New services ☐ Click-and-mortar models

mass-customization forces many companies to focus on their core competences, and outsource a wide range of functions including design, manufacturing, and

distribution. This trend drives the need for a virtually integrated supply chain.

There are four key dimensions in which the impacts can be found:

- Information integration
- Planning synchronization
- Workflow coordination, and
- New business models

Taken in order, these four represent escalating degrees of integration and coordination among supply chain members, culminating in whole new ways of conducting business.

a) *Information Integration*

Information integration refers to the sharing of information among members of the supply chain. This includes any type of data that could influence the actions and performance of other members of the supply chain. Some examples include: demand data, inventory status, capacity plans, production schedules, promotion plans, and shipment schedules. Ideally, such information can be accessible by the appropriate parties on a real-time, on-line basis without significant effort.

b) *Planning Synchronization*

Planning synchronization refers to the joint design and execution of plans for product introduction, forecasting and replenishment.

In essence, planning synchronization defines *what* is to be done with the information that is shared; it is the mutual agreement among members as to specific actions based on that information.

Hence, members in a supply chain may have their order fulfilment plans coordinated so that all replenishments are made to meet the same objective – the ultimate customer demands.

c) *Workflow Coordination*

Workflow coordination refers to streamlined and automated workflow activities between supply chain partners. Here, we take integration one step further by defining not just “what” we would do with shared information, but “how.” For example, procurement activities from a manufacturer to a supplier can be tightly coupled so that efficiencies in terms of accuracy, time, and cost, can be achieved. Product development activities involving multiple companies can also be integrated to achieve similar efficiencies. In the best-case situation, supply chain partners would rely on technology solutions to actually automate many or all of the internal and cross-company workflow steps.

d) *New Business Models*

Adopting e-business approaches to supply chain integration promises more than just incremental improvements in efficiency.

Many companies are discovering whole new approaches to conducting business, and even new business opportunities not previously possible. E-business allows partners redefine logistics flows so that

the roles and responsibilities of members may change to improve overall supply chain efficiency. A supply chain network may jointly create new products, pursue mass customization, and penetrate new markets and customer segments. New rules of the supply chain game can emerge as a result of integration fuelled by the Internet.

e) *Integration = Cooperation*

Integration cannot be complete without a tight linkage of the organizational relationships between companies. This linkage must take place on many planes.

- *Channels of communication* must be well defined and maintained, with roles and responsibilities clearly articulated.
- *Performance measures* for members of the supply chain also need to be specified and monitored. A member of the supply chain may be held accountable for some performance measures of another member, and there may be some performance measures for which multiple organizations are jointly held accountable. Such extended performance measures encourage closer collaboration and coordination.
- *Incentives must be aligned* for all members in order for supply chain integration to work. Incentive alignment requires a careful definition of mechanisms in which the risks and associated gains of integration efforts are equitably shared. Moreover, the incentive for each member must commensurate with her investment and risk.

The success of any supply chain integration effort is predicated on close cooperation inspired by a perception of mutual benefit. As we will see, e-business approaches can go a long way toward fostering the necessary level of trust and commitment.

f) *The Role of technology and the internet*

Supply chain integration is not new; many companies have already pursued it as a way to gain competitiveness. Information technology has long been a major factor. Relational databases, client/server architecture, TCP/IP network protocols, multimedia, wireless technology, and most recently, the Internet, have each, in their way, spurred new innovation and new possibilities.

The e-business, or Internet computing, model, has now emerged as perhaps the most compelling enabler for supply chain integration. Because it is open, standards-based and virtually ubiquitous, businesses can use the Internet to gain global visibility across their extended network of trading partners and help them respond quickly to changing business conditions such as customer demand and resource availability.

III. ELECTRONIC INFORMATION INTEGRATION

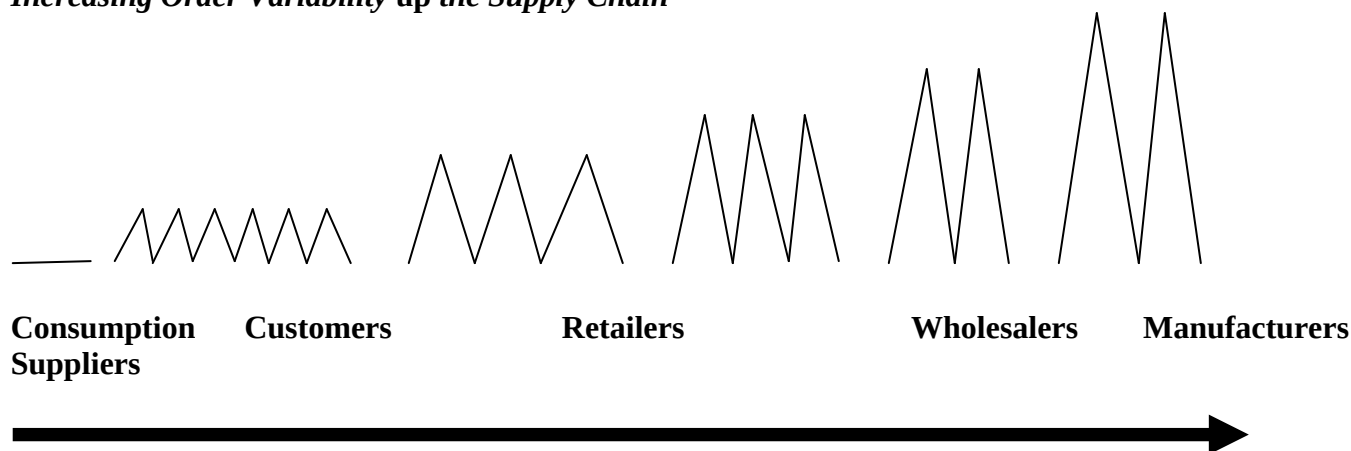
Information integration is the foundation of supply chain integration. For companies across a supply chain to coordinate their product, financial and information flows, they must have access to accurate and timely information reflecting the status of their supply chain. The capability for all supply chain partners to have access to share information on a timely basis is therefore a key to improving supply chain performance.

To ensure that a supply chain is driven by true consumer demands, information sharing is critical. This is the most effective way to counter the problem of

demand information distortion in a supply chain -- the well known "bullwhip effect." Information distortion often arises when partners make use of local information to make demand forecasts and pass them to upstream partners; partners making ordering decisions based on local economic factors, local constraints or performance measures; and gaming behaviours to exaggerate orders when there are perceived uncertainties in supply conditions. These distortions are amplified from one level to another in a supply chain, and are considered to be one of the biggest causes of inefficiencies in a supply chain.

Figure 1 : Information Distortion and the Bullwhip Effect

Increasing Order Variability up the Supply Chain



One way to counter the bullwhip effect is to have transparency of demand information. Indeed, in the grocery industry, such transparency is considered to be the cornerstone of supply chain integration, and is a key ingredient of "Efficient Consumer Response," a movement towards total supply chain integration in that industry. Companies engaged in information sharing efforts usually share sales data, inventory status, production schedule, promotion plans, demand forecasts, and shipment schedule information.

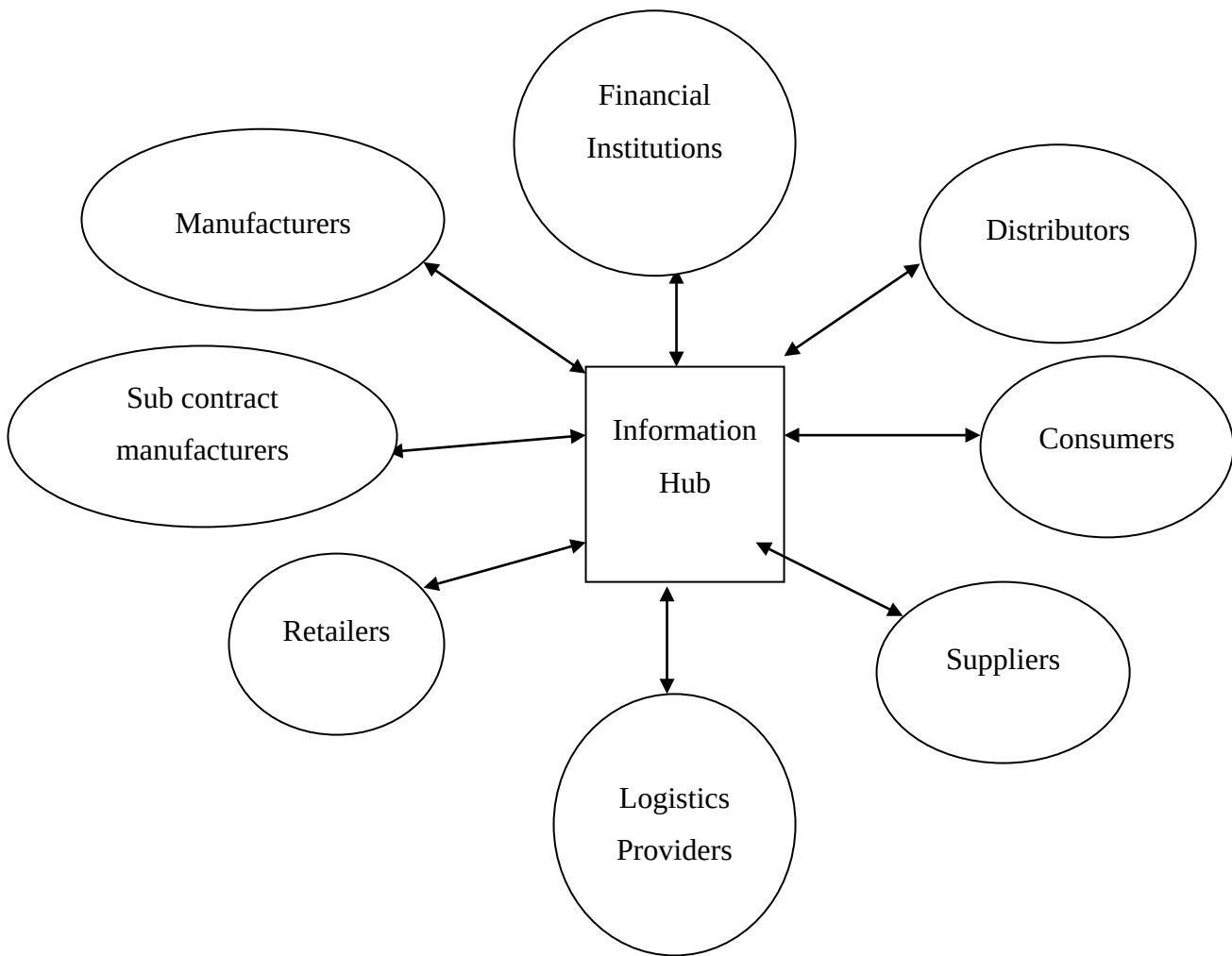
a) Internet Info hubs: key to sharing

The Internet is an efficient electronic link between different entities, and has proven to be an ideal platform for information sharing. The power of the Internet stems from open standards, permitting easy, universal, yet secure, access to a wide audience at a low cost.

One approach to Internet-based supply chain integration is the *information hub* that instantly processes and forwards all relevant information to all appropriate parties. The information hub is a node in the data network where multiple organizations interact in pursuit of supply chain integration. It has the capabilities of data storage, information processing, and push/pull publishing. The overall network forms a hub-and-spoke

system with the participants' internal information systems (i.e., ERP or other enterprise systems) being the spokes.

Figure 2 : The Information Hub Model



An analogue to the information hub in the physical logistics world is "cross-docking," a process in which products from multiple supply sources arriving at a logistics hub are sorted in accordance to the needs of destination points. They are then delivered to the destination points without being stored at the hub. In a similar fashion, the information hub allows critical supply and demand data to be "cross-docked" and seamlessly forwarded to the right partners at the right time.

b) Collaboration = Profits

Is information sharing worth the effort and risk? A recent study conducted jointly by Stanford University and Accenture (formerly Andersen Consulting), looked at 100 manufacturers and 100 retailers in the food and consumer products industry. The results were revealing: companies that reported higher than average profits were the ones who were engaged in higher levels of information sharing.

IV. PLANNING SYNCHRONIZATION

Once supply chain members agree to share information, the next logical step is to agree on what to do with it. Planning synchronization points to the exchange of *knowledge* by the partners so that they can collaborate to create synchronized replenishment plans. Establishing ground rules on what to do with shared information and agreeing on critical actions up and down the supply chain can further mitigate problems such as the bullwhip effect. It also goes a long way toward ensuring that all partners achieve full value from the integration exercise.

Here, again, the Internet can play a key role. One such example is the Collaborative Planning, Forecasting and Replenishment (CPFR) initiative. In CPFR, both the buyer and the seller make use of the Internet to share forecasts, detect major variances, exchange ideas and collaborate to reconcile differences, so that eventually, both have a common forecast and replenishment plan.

Currently, the Voluntary Industry Commerce Standards Committee is working on formalizing the process models and technology framework for CPFR. It encourages companies to utilize the Internet, with electronic bulletin boards, to pursue the collaborative efforts.

a) From Nuts to 'Nets the internet delivers

Both consumer and business-to-business companies can achieve the benefits of Internet-driven collaboration. Snack giant Nabisco successfully conducted a promising CPFR pilot with grocery chain Wegmans. Due to smart promotions, Wegmans had seen an 11% growth of snack nut sales versus a 9% decline at other retailers. By strategically sharing demand data and collaborating closely on promotions and replenishment, Nabisco saw its Planters sales jumped 40%, dramatically increasing its market share at Wegmans. Moreover, Nabisco's warehouse fill rate increased from 93% to 97%, while inventory dropped by 18%.

Several other pilots are now under way at Schnuck Markets, Kmart, Circuit City, P&G, Kimberly Clark, Sara Lee and Wal-Mart.

In the business-to-business world, Adaptec, a fab-less semiconductor company, and Cisco Systems, the leading networking equipment vendor, are undertaking similar initiatives.

The case of Adaptec illustrates the value of internet-based collaboration to a company faced with evolving supply processes, innovative products, and a geographically dispersed supply chain.

Using a software application called Alliance (developed by Extricity, now part of Peregrine); the company communicates in real time with its design centre in California, its foundry in Taiwan, and assembly plants in Japan, Hong Kong and Singapore, exchanging detailed and complex design drawings, prototype plans, test results, and production and shipment schedules. This greatly facilitates their ability to check demand and supply levels, and respond quickly to potential mismatch problems. It also helps shorten their new product development times. With the use of Alliance, Adaptec's cycle time was cut by more than half.

In another example of planning synchronization, Cisco has embarked on a very ambitious project to create an e-Hub linking multiple tiers of suppliers via the Internet. It is intended to coordinate supply and demand planning across the supply chain, using intelligent planning software provided by Manugistics. The e-Hub will also help identify potential supply and demand problems early, give proper warning to the appropriate parties, and permitting prompt resolution, all via the Internet.

b) IP and Knowledge Sharing

Other new companies have emerged to support new product designs and new product introduction

through collaboration and sharing of intellectual properties. One example is Spin Circuit in the electronics industry. By creating a Universal Data Network for design data such as EDA CAD libraries, MUP/ERP and PDM, approved vendor lists, and design data sheets, design engineers and manufacturing engineers can collaborate to speed up the design and introduction process. The Internet has thus played a key role in supporting companies to "design for supply chain management."

The Internet is also enabling innovative ways to leverage knowledge capital critical to the design process. For example, Boeing, TRW and Monsanto used Yet2.com's Web site to collaborate and trade intellectual properties among partners, saving millions of dollars on research and development.

c) Profits Follow Collaboration

As with information sharing, synchronized planning pays big dividends for those willing to make the investments. The Nabisco example is just one of many examples.

The survey found that companies reporting higher than average profits are also more engaged in joint logistics replenishment and planning programs with their trading partners. Grocery manufacturers Campbell Soup and Procter and Gamble, and retailers Hannaford Brothers and H.E. Butt, have also found that synchronized replenishment programs improved their inventory turns.

V. ELECTRONIC WORKFLOW COORDINATION

The Internet permits companies to take collaboration one steps further, through coordination, integration and even automation of critical business processes. Workflow coordination can include activities such as procurement, order execution, engineering change, design optimization, and financial exchanges. The result is much more cost-effective, speedy, reliable and less error prone supply chain operations. Below, we offer a number of examples of how different companies are pioneering workflow coordination activities in these and other areas.

a) Procurement

A typical manufacturing company needs to procure thousands of products from hundreds of suppliers. The Internet helps to manage the complexity of the procurement process. Numerous companies including Ariba and Commerce offer Web-based enterprise procurement solutions that dynamically link the buyer into real-time trading communities over the Internet. They also automate the internal procurement process from requisition to order, as well as the supplier interactions from order to payment.

The solutions enable companies to reduce operational costs and increase efficiency by automating the entire indirect goods and services supply chain. Indeed, most of the market exchanges, such as Covisint for the automobile industry, Exostar for the aerospace industry, Converge and e2open for the electronics industry, and Transportation for the grocery industry, provide e-procurement solutions for their members.

Increasingly, companies are also relying on scientific replenishment¹ software to drive the timing and quantity decisions in procurement. For example, Longs Drug Stores, a retail pharmacy chain, uses the service of Nonstop Solutions to manage its ordering and replenishment processes at their distribution centres and stores. This results in inventory turns that are head and-shoulders above the competition. Longs' supply chain has been dubbed the "hyper-efficient pharmaceutical demand chain."

b) Order Processing and Financial Flows

Instil, a Silicon Valley start up company, has created an Internet-based service to facilitate and process orders, as well as coordinate rebates, discounts, and other financial exchanges for operators (like restaurants), distributors and manufacturers in the foodservice industry. Its mission is to develop easy-to-use services that lower costs and provide valuable information for all members of the foodservice supply chain. Its solution replaces the traditional time-consuming, error-prone purchasing systems with a secure and user-friendly client program for food operators to order food products on the Web. In addition, the Web site serves as an information hub that links buyers and suppliers in the food service market

c) Procurement Coordination for New Products

Sourcing parts for new products can be a major hurdle to timely and profitable new product introductions. Using the Internet, companies can conduct complex purchasing tasks — such as parts-list management, quoting, decision-making, ordering, and order change and order confirmation— in hours instead of days. The Internet also lets companies tap into a bigger supply base to ensure dependable supply and backup sources. Timeliness in supplier selection, order quote generation and receipt, and the integration of purchasing decisions with a company's internal Enterprise Resource Planning systems are particularly valuable in new product introduction.

Solelectron, a leading contract manufacturer and unprecedented two-time winner of the National Malcolm Baldrige Award, made use of Digital Buyer, an Internet-based procurement software application provided by Digital Market (now part of Agile Software), to reach multiple suppliers and obtain price and availability quotes. In its pilot with Digital Buyer, 5 out of 6 suppliers responded in as little as 4 hours to requests for quotes for 55 parts. Within two days, the company had received

a total of 156 quotes, a dramatic improvement over traditional methods.

The end benefit is drastically reduced cycle time to support Solelectron's customers' new product introduction process.

d) Engineering and Product Change

As product life cycles grow shorter and shorter, managing product rollovers — the transition from one version of a product to another — is now a routine challenge faced by many high tech companies. Product rollover can be a vulnerable time for a company, exposing them to significant loss of market share if mismanaged. A major risk is the time taken to have all the new parts ready for the rollover. Engineering changes involved in rollovers may require both new suppliers, new bills of materials, and new requirements for existing parts. Companies in fast changing markets, like Dell Computer, Pair Gain, WebTV and Flextronics use an Internet-based solution from Agile Software to streamline engineering changes. Product changes — updates, enhancements and patches performed between product versions — are equally common events in the high tech industries. These changes can be due to component cost change, product improvements, process modifications, quality feedbacks, material shortages, and product obsolescence. Product changes involve the collaboration of design engineers, procurement, suppliers, manufacturing and process engineers, contract manufacturers, service support, and product management. Here, again, Internet-based solutions can play a key role, providing a platform for coordinating and streamlining the complex activities entailed in product changes.

VI. NEW BUSINESS MODELS

Once companies begin to realize the promise of e-business enabled supply chain integration, they often discover entirely new ways of pursuing business objectives, developing strategies and business models that were neither apparent nor possible prior to the Internet. These new business models and opportunities are as limitless as the imagination. The following examples show the range of possibilities.

a) Virtual Resources

The Internet facilitates information search so that multiple resources in a supply chain that once acted independently can now be tapped simultaneously to satisfy special needs. Examples include inventory stockpiles, untapped capacity, or even unmet demand, all of which can be pooled to create a secondary market of "virtual resources." Such secondary markets can create high value for participants by minimizing imbalances between supply and demand and reducing exposure to inventory obsolescence.

Internet-based secondary markets can thus benefit, in most cases, every member of the supply chain.

One example of a virtual resource is World Chemical Exchange, an electronic marketplace operated by Chemical Connect providing a global market for chemical and plastic manufacturers and buyers.

More than 2,500 members, representing 80 percent of the world's top 25 chemical companies, now can conduct round-the-clock trading of chemicals and plastics of all types. Converge operates a market exchange for the secondary market of electronics components. Since the high tech industry has very short product life cycles, excess inventory of components and parts can result in huge obsolescence costs, while suppliers and manufacturers are not always able to produce more of their products that are close to the end of the product life cycle.

Converge minimizes such exposure by providing an open virtual marketplace for buyers and sellers.

b) Supply Chain Restructuring

With the advance of information technologies, companies can also restructure the logistics flows of their products to gain efficiencies.

Physical flows no longer have to follow information flows: the Internet allows information flows to substitute for some of the inefficient physical flows. Cisco has been one of the most successful companies engaged in using the Web to this end. With 74% of its sales conducted over the Internet, the company outsource most of its manufacturing while devoting sales efforts to creating new customers. An elaborate Web-based information system links Cisco and its supply chain partners, and takes care of all the necessary information flows. But the physical flows can be quite simple – 55% of Cisco's sales are shipped directly from the subcontract manufacturers to the customers, without stopping at Cisco's distribution centres. The result: lower inventory, faster, more accurate order fulfilment, and reduced costs.

c) Product Upgrades

Most of us are familiar with the use of the Internet to perform upgrades to software products. But some innovative companies are exploring ways to use the Internet to upgrade hardware products, as well. Xilinx is a semiconductor company producing field-programmable logic devices. Some of the products in which Xilinx integrated circuits reside are going through constant product generation changes that would require onsite updating or even physical replacement. To address this problem, Xilinx developed Internet-Reconfigurable-Logic (IRL). With IRL, the field programming logic can be modified or updated after the installation at the end user's premises over networks

and the Internet. These online field upgradeable systems can range from multi-use set-top boxes and wireless telephone cellular base stations to communications satellites and network management systems. Today, Xilinx is the market leader for field programmable logic.

d) Mass Customization

The Internet enables many companies to use the Web to allow customers configure specific order options tailored to the tastes and preferences of the customers. Hence, the Internet facilitates mass customization. This has been a key feature of online retailers, but has now spread too many mainstream business and products. Examples run the gamut from personalized greeting cards (e-Greetings, now part of American Greetings), to computers (Dell), from bicycles (Cannondale and Voodoo) to automobiles (Ford and GM). Mass customization, while not appropriate for every product or industry, can be a powerful way of cementing customer relationships by providing a highly cost-effective level of personalized service.

e) Service & Support

Service and support can be a time-consuming, costly diversion for many companies. Using the Internet to perform remote sensing and diagnosis has proven to be a highly cost-effective solution. Looking at the PC support area, a software company called tuneup.com developed a remote maintenance service aimed at helping individual and companies keep their PCs running. A subscriber of the service allow the service centre to remotely collect data on her computer, checking viruses and other anomalies, alerting the customer, and providing online fixes.

They also advise and help the subscriber to install software upgrades, hardware drivers, and program add-ons specific to her computer. Subsequently acquired by Symantec and re-dubbed Norton Web, this remote service approach has been adopted by a wide range of end-user and enterprise service companies.

Under an "Auto test" program, Cisco's suppliers run software routines that perform quality tests at their local test cells. The test data are sent over the Internet to Cisco, so that Cisco engineers can remotely monitor and control test cells. This enables them to resolve problems that the suppliers themselves cannot diagnose.

The standardized test results across the entire supply base allow Cisco to scale the activity rapidly and obtain valuable information about their products that might not be available without such an arrangement.

f) From Products to Service

Intuit develops and markets the world's best-selling personal finance, small business, and tax preparation software, as well as a set of Web-based

financial tools. In the past, the company offered only software products sold primarily through retail stores. With the advance of the Internet, Intuit has been able to create Internet based services for both individuals and businesses. These range from online tax preparation and form submission to payroll, office supplies procurement, mortgage brokering, insurance, electronic bill payment and much more.

In addition, since Intuit has links to many key banking institutions, it can also access the appropriate data, such as dividends and interests payments, and include them in the electronic tax filing.

The revenue from services, enabled by the Internet, is steadily increasing as a percentage of Intuit's overall revenue. Delivering these services to customers via the Internet is only the most visible aspect of this strategy. Behind the scenes, Intuit uses a range of Internet tools and solutions to link and orchestrate a vast supply chain of providers, from banks and brokerage houses to independent mortgage brokers, from insurers to office supplies retailers like Staples. Without the Internet, Intuit's transition to a service-based company would not be possible.

g) Multi-channel Click-and Mortar Fulfilment

The high cost of order fulfilment for online retailers has been viewed as a major impediment to success. Traditional "offline" retailers are pioneering the combination of the digital channel with traditional brick-and-mortar infrastructure. 7dream.com in Japan is an example of such a "click-and-mortar" multi-channel model.

Seven-Eleven Japan (SEJ) is the largest and most successful convenience store chain in Japan. In 2000, SEJ created 7dream.com, a joint venture involving seven of Japan's industry giants: SEJ, Nomura Research Institute (NRI), Mitsui, Sony, JTB, NEC and Kino trope. 7dream offers a large pool of products on its Website, allowing customers to pick up orders at a local SEJ store two or three days later. In this way, the value of Internet-based channel is combined with the power of SEJ's infrastructure of extensive stores and logistics without incurring the costs and risks of carrying an expanded range of inventory.

Another example of click-and mortar multi-channel fulfilment is CVS, a major US pharmacy chain. CVS allows customers to place prescription orders on the CVS Web site and pick up their orders at their local store, eliminating wait. In another example, Toys R Us leverages the logistics infrastructure of Amazon.com for order fulfilment, while customers can order directly from the company via its Web site. Many others like the Gap and Lands' End are developing similar click-and-mortar multi-channel fulfilment and distribution strategies.

VII. SUPPLY CHAIN MONITORING AND MEASUREMENT

The ultimate value of supply chain integration can only be achieved if all partners trust that they will see returns commensurate with the effort invested. Moreover, they must not perceive that their participation puts them at a competitive disadvantage, either against other members, or against traditional competitors. The more complex and dispersed the supply chain, the more difficult it is to balance the needs of all parties. To assure mutual trust and optimum performance at every point in the chain, monitoring and measurement emerge as critical success factors.

a) A New Industry Based on Trust

Monitoring supply chain performance is an intriguing new field. Terms like Supply Chain Event Management, Supply Chain Process Management, or Supply Chain Execution Management are used interchangeably for this purpose. Supply chain monitoring must start with tight tracking of the many different processes involved in a supply chain. A number of new technology solutions are appearing to provide updated information on how products and information flow through the different parts of the supply chain. A few of them are described below.

b) Manufacturing

In manufacturing processes, Data Sweep has created a sophisticated system to track manufacturing data, such as capacity, yield, work in process, and machine status, etc. Such information can then be transmitted via the Internet to appropriate parties, and hence provides the foundation of manufacturing process monitoring.

c) Transportation/Logistics

Savi Technologies is an example of a company that makes use of RFID (Radio-Frequency Identification) technologies to track individual products, containers like totes or pallets, and transportation vehicles, as they move through key choke points along the supply chain (such as a warehouse, a dock, or an airport.) The information is put on a common Internet platform, so that total visibility of end-to-end real-time movements can be obtained. The company's new offering, Smart Seal, provides secure monitoring of products against tampering or thefts. It also enables customs clearance to be carried out effortlessly, once the security of product contents is assured.

d) E-Hubs as monitoring Systems

Tight monitoring enables companies to detect problems early, so that corrective actions can be taken promptly. The e-Hub concept, described earlier, that Cisco and other companies are undertaking can be viewed as a supply chain monitoring system. Many other new ventures, such as World Chain, Sourcing, etc.

and Vigilance, as well as established players like EXE, Vastera and Descartes, are providing monitoring services using the Internet platform.

e) Procurement and Contract Compliance

Monitoring often requires tracking of supplier performance and contract fulfilment.

The foodservice market exchange Instil, mentioned earlier, provides this service for their customers. For example, a food operator such as the Marriott may have a contract with a food supplier, stipulating pricing terms based on the aggregate purchase of the products by Marriott hotels and operators (who often also make independent purchasing decisions). It is in the interest of Marriott headquarters to monitor the compliance of the contract by the individual hotels and operators in order to ensure best prices and uniform quality. Instil now offers a purchase tracking service for multi-unit foodservice operators, and allows executives of food operators to view up-to-the-minute purchasing activity for better control.

Manufacturers, for their part, must have access to the aggregate demand and tracking data showing how their products move through each distribution channel. Provato (now part of I-many) and DiCarta are other examples of companies that provide Internet-based software solutions to help companies construct and monitor compliance of contractual agreements.

f) Cross-Chain Monitoring

Supply chain integration also requires performance measures that go beyond a company measuring its own performance. As companies share demand information, collaborate on planning decisions, and exchange decision rights for supply chain integration, it is important that performance is not measured locally, but that performances at different parts of the chain are shared to all appropriate parties. The Internet can again be used to facilitate performance measurement across a supply chain. For example, See Commerce was instrumental in helping DaimlerChrysler's service parts division, the Mopar Parts Group, improved its service performance drastically.

Internet-based software product, the See Chain suite, was implemented by the Mopar Parts Group to monitor performances at multiple parts of the service supply chain. The investment paid back in only 12 weeks.

demand as the next way to optimize resources and performance.

The application of e-business practices can provide a massive set of demand data with great value potential. Data mining, data marts and other database analysis techniques have long provided companies with the ability to derive business intelligence from internally generated sources. Statistical aggregation of consumption data from multiple sources can provide market information for manufacturers and suppliers essential to planning merchandising decisions, promotion plans, and new product development decisions.

In still's suite of Internet services, used by an extensive set of distributors and operators in the foodservice industry, for example, enables business intelligence. The company consolidates industry-wide data and offers business intelligence information as a service to customers for improving their profitability and market positions.

Another example of using demand data to create business values is Demand Tec. Using extensive data, the company's proprietary scientific methods, based on sophisticatedly statistical analyses and optimization techniques, can analyze customer demand characteristics, and help companies to optimize their demand management decisions, such as merchandizing, pricing, promotion plans, and assortments, etc. The optimization is based on nonlinear programming techniques, capturing the interactive effects of products, stores, marketing instrument decisions, and time, as well as the supply chain cost impacts resulted from the demand management decisions. Such a powerful solution is made possible due to the existence of extensive demand data.

The combination of comprehensive demand data and transparency across the supply chain opens the door to the next stage in supply chain integration: demand management. While many view demand as a murky and unpredictable variable in their attempts to plan, there are many opportunities to tune and manage demand to bring it into concert with the rest of the supply chain. Armed with up-to-the-minute capacity and resource data, companies can target demand creation programs such as discounts, rebates, regional or niche marketing to stimulate or dampen demand. Look for new initiatives and technology solutions in this area in the near future.

VIII. THE NEXT WAVE: MARKET INTELLIGENCE AND DEMAND MANAGEMENT

As tools and techniques for managing the supply side of the equation mature and become more widely adopted, companies will turn to managing

IX. CONCLUSION

E-business has been a powerful and compelling enabler of supply chain integration across a wide range of industries. As a result of e-business, many of the core supply chain concepts and principles have been put in practice in a much more effective way. These concepts include: information sharing, multi-party

collaboration, design for supply chain management, postponement for mass customization, outsourcing and partnerships, and extended or joint performance measures. The Internet has allowed companies to come up with highly innovative solutions that accelerated the widespread adoption of these core supply chain principles.

In the next few years, we will see an explosion of business-to-business applications of the Internet as visionary companies develop new paradigms of e-business for the future. Many have already found ample opportunities in e-business. Such advancements have accelerated the movement towards supply chain integration. The landscape of such integration efforts will be very different from the traditional ones. Companies that make use of e-business to redefine supply chain integration will achieve significant increases in efficiency and gain tremendous competitive edge over their competitors.

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The Impact of Effective Management of Credit Sales on Profitability and Liquidity of Food and Beverage Industries in Nigeria

By M.S.K. Ifurueze

International University, Bamenda

Abstract - The study examined the impact of effective management of credit sales on profitability and liquidity of Food and Beverage Industries in Nigeria.

The study centered mainly on the effect of each of the individual components of credit sales, profitability, liquidity and activity level of the companies under study which include the credit sales percentage, gross profit margin, net profit margin, return on capital employed, debtors collection period, debtors turnover, acid test ratio and return on current assets. Also the credit policy variables were examined which include credit standards, credit terms and collection policy and procedures.

Data were obtained from the Annual reports and Accounts of the selected companies of year (2007-2011). The relevant data were subjected to statistical analysis.

Analysis of variance (ANOVA) was used in testing the hypotheses. The study revealed that when credit sales are effectively managed profitability is at a desirable level. Lastly, the finding revealed that when a firm's debtors turnover is favourable, liquidity is at a desirable level.

Keywords : credit sales, credit policy, liquidity, profitability, debtors turnover, manufacturing companies, food and beverage industries.

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The researchers recommended that companies should consider their mission, the nature of their businesses and their business environment before setting up a credit policy

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1. INTRODUCTION

a) Background information

Business organizations in their attempts to make profit adopt several strategies and one of which is allowing credit to customers. Pandey, (2004). Submitted that credit is a marketing tool for expanding sales. Credit sales to customers however must be well monitored because regardless of an organizations share of the market and demand for its products, if there are no measures put in place to regulate sales made to customers on credit, there could be problems especially those related to liquidity and cash flow.

Trade credit arises when a firm sells its products or services on credit and does not receive

cash immediately. It is an essential marketing tool, acting as a bridge for the movement of goods through production and distribution stages to customers. According to Pandey (2004), a firm grants trade credit to protect its sales from the competitors and attract the potential customers to buy its products at favourable terms. Trade credit creates accounts receivable or trade debtors that the firm is expected to collect in the near future.

A firm's investment in accounts receivable depends on volume of credit sales and collection period. The customers from whom receivable have to be collected in the future are called trade debtors or simply as debtors and represent the firm's claim or asset.

Trade debtors form a major portion of the current assets of any company next to stock. It arises when customers are allowed to buy goods or services on credit and payment deferred till later date. Thus, the working capital management presumes the effective use of trade debtors (accounts receivables) to ensure increased profitability and liquidity in the firm.

The issue of management of trade credit has every cause to be given reasonable attention considering the incessant liquidation (Winding -up) of some manufacturing firms in recent times due to the effect of credit sales.

Granting of credit indeed increases sales volume and consequently profit level. In a competitive environment such as Nigeria, increasing ones level of profit is one of the ways to ensure survival or continuity in business.

The important of credit policy therefore to any business organization cannot be over emphasized because it is a factor that has a strong influence on the cash inflow of an organization from its sales activities which is very critical to an any business organization. Every credit policy set by an organization seeks to achieve adequate profitability and flow of cash (liquidity) which are the two basic factors that sustain a business in the present and determines its position in the long run.

A company's credit policy refers to the actions taken by a business to grant, monitor, and collect the cash for outstanding accounts receivable (Maysami, 2010). The credit policy of a typical organization contains the following variables: collection policy, cash

Author : PH.D, CNA, Acti Department of Accountancy Anambra State University & Success Blessing Ejura Department of Banking & Finance Kogi state University Andmusa Success Jibrin Department of Accounting International University, Bamenda.
E-mail : musasuccessj@gmail.com

discount, credit period and credit standard, while Miller (2008), classified it as credit limits, credit term, deposits, customer information and documentation. And each of the components of a company's credit policy is used as a tool for monitoring account receivables which is the outcome of credit sales; it covers from the kind of customers that credit may be extended to when actual collections would be made.

There is however no particular universal credit policy that should be adopted by every organization. The credit policy of an organization should therefore be based on its particular business and cash flow circumstances, industry standards, current economic conditions, and the degree of risk involve. For a manufacturing business organization to achieve its critical objectives of liquidity as it allows credit to customers, concern should be given to its credit policy, it should be adequately planned and its adherence must be strictly emphasized.

However, it has not been an easy task for firms that grant credit to deserving customers because of the costs associated with credit sales. Also, many firms in Nigeria that do not grant credit have bitter experiences. In the same vein granting of credit amounts to temporary deprivation of the use of the company's or firm's fund thereby locking up that amount of the capital which might be profitably for other purposes, (Pandey, 1993). This implies investing in the debtors concerned and probably looking for other sources of finance in the day to day operations of the firm. It is not certain whether the credit will be paid on terms agreed upon.

It is a bitter experience to note that most companies in Nigeria do not grant credit and a few that do merely allow a small portion of their total sales as credit sales. This is a problem arising from inefficient management of credit sales or trade debtors. The reasons sometimes given by firms for not granting credit include insufficient information about the customers, the level of trust in our business environment today due to the activities of fraudsters. It is in this regard that the chief Olusegun Obasanjo led administration introduced an agency called Economic and Financial Crimes and other related issues.

Granting of credit no doubt leads to bad debts. In the words of Pandey (2004), a credit sale has three characteristics:

- i. It involves an element of risk that should be carefully analyzed.
- ii. It is based on economic value. To the buyer, the economic value in goods or services passes immediately at the time of sale, which the seller expects on equivalent value to be received later on.
- iii. It implies futurity. The buyer will make the cash payment for goods or services received by him in a future period.

The customers from whom receivables have to be collected in future are called trade debtors and they represent a company's claim on assets.

According to Pandey (2004), Debtors constitute a substantial portion of current assets of several firms. For example in India, trade debtors, after inventories (Stock), are the major components of current assets. They form about one-third of current assets in India. Granting credit and creating debtors amount to the blocking of the firm's funds. The interval between the date of sale and the date of payment has to be financed out of working capital. This necessitates the firm to get funds from banks or other sources. Thus, trade debtors represent investment. As substantial amounts are tied-up in trade debtors, it needs careful analysis and proper management.

From the foregoing analysis, it implies that granting of credit by a firm to his customers needs careful analysis and proper management. The firm's success or failure is significantly affected by the strength of credit policy adopted.

b) Statement of the Problem

The growth in economic activities as currently witnessed in Nigeria; in our present democratic government with its attendant limited financial resources available to the operators of the market has no doubt brought about increase in credit transaction. The impact depends on the skill and prowess with which the companies manage their credit sales.

Beckan and Richard (1984) have seen that most companies after granting credit sales rely on them as assets without providing adequately for possible. bad and doubtful debts. With this situation, the financial statements of such companies obviously will lack true and fair view because of the fact that the amount of trade debtors cannot be fully realized.

In the same vein liquidity problem is not left out when granting credit sales. This arises from over investment in receivables especially when the debtors are of high risk class. A company suffering from liquidity problem implies that the cost of obtaining funds from other sources may be high and a credit sale beyond the optimal level of credit is dangerous. On the other hand, sales level and profitability are reduced as a result of high or tight credit policy or not granting credit at all.

According to Atuche, (1999), Research work has shown that credit sales enhance both profitability and liquidity positions of firms if properly managed.

The investment in accounts receivable may be expressed in terms of costs of sales instead of sales value.

According to Pandey (2004), the volume of credit sales is a function of the firm's total sales and the percentage of credit sales to total sales. Total sales depend on market size, firm's market share, product quality, intensity of competition, economic conditions

etc. The financial manager hardly has any control over these variables. The percentage of credit sales to total sales is mostly influenced by the nature of business and industry norms. For example, car manufactures in India, until recently, were not selling cars on credit. They required the customers to make payment at the time of delivery; some of them even asked for the payment to be made in advance. This was so because of the absence of genuine competition and a wide gap between demands for and supply of cars in India. This position changed after liberalisation which led to intense competition. In contrast, the Food and Beverage industries sold a small proportion of their total sales on credit to the wholesale dealers. These industries are not under serious financial pressure.

There is one way in which the management of firm can affect the volume of credit sales and collection period and consequently, investment in accounts receivable. That is through the changes in credit policy. The term credit policy refers to the combination of three decision variables: (i) credit standards, (ii) credit terms, and (Hi) collection efforts, on which the management has influence.

However, the extent at which credit sales increase both profitability and liquidity position has not been established. And thus, the researcher attempts to find out the extent at which credit sales enhance both profitability and liquidity position of manufacturing companies in Nigeria.

Purpose of the Study: The main objective of this study is to examine the impact of effective and efficient management of credit sales on profitability and liquidity of Food and Beverage industries in Nigeria. However, secondary objectives of the study are:

1. To establish the correlation between the level of credit granted to customers and operating profit of the companies.
2. To establish the relationship between liquidity position and debtors turnover.
3. To identify the various reasons for granting credit to customers by the firms
4. To ascertain the reliability of credit sales as a marketing tool for expanding sales volume in the companies.

c) *Hypotheses*

In order to achieve the objective of this research work, the following hypotheses were formulated. They are stated in the NULL (Ho) and ALTERNATIVE (H1) forms to enable the use of statistical test on the data collected. The hypotheses are as follows:

i. *Hypothesis One*

Null (Ho): There is no significant relationship between the level of credit granted to customers and operating profit of the companies.

Alternative (H1): There is significant relationship between the level of credit granted to customers and operating profit of the companies.

ii. *Hypothesis Two*

Null (Ho): There is no positive and significant correlation between liquidity position and debtors turnover of the companies

Alternative (H1): There is positive and significant correlation between liquidity position and debtor's turnover of the companies.

iii. *Significance of the Study*

Having stated earlier that companies grant credit to their credit worthy customers, invariable we have accepted the existence of accounts receivable or trade debtors.

The credit policy laid down by management as a guide for action in the determination of credit limit, standards, terms and collection efforts has strong implications. Credit terms granted to customers have effect on receivables, thus increasing working capital.

However, it should be reiterated that although management sets credit terms, its final determination depends on prevailing trading practices as well as changing economic conditions. It does not mean that the firm or company's management cannot use their discretion to determine its credit policy in such a way that liquid funds will always be available to meet operational needs.

It is this situation that necessitated this research work which is aimed at examining the impact of effective and efficient management of credit sales on the profitability and liquidity positions of Food and Beverage in Nigeria.

Trade credit is a vital and convenient source of financing mainly for companies who could not source funds from financial institutions. A company that fails to qualify for bank financing may receive trade credit if it is credit worthy.

In the light of the above, the study will serve as a source of information of companies granting credit with respect to the policies and procedures to be adopted.

It will also be relevant to students of accounting and other related courses for research purposes. The general public will equally benefit because it will serve as a reference material when adopting any credit policy. Also management practitioners will find the data and views expressed in this research work relevant to their day to day business decisions especially in the manufacturing industries.

II. LITERATURE REVIEW

a) *Credit Sales Management*

Having stated earlier that firms grant credit to their credit worthy customers, invariably we have accepted the existence of debtors. In other words,

granting of credit leads to creation of trade debts in business which can be further classified into good debts, doubtful and bad debts.

Management of debtors is crucial in the management of working capital because poor management of trade debt can lead to the provision of large sum of funds for bad and doubtful debts.

According to Pandey (2004), bad debt losses arise when the firm is unable to collect its accounts receivable. The size of bad debt losses depends on the quality of accounts accepted by the firm.

In the words of Uchegbu (2001), it is wise to discourage bad debts and efforts should be made to encourage discount more importantly cash discount. This is contrary under competitive business environment where survival depends on the volume of turnover (sales) which in turn leads to trade debt accumulation. Here debtors cannot be completely avoided it is therefore the work of the management to initiate policies concerning credit sales so that they will survive in the business environment they find themselves.

In the words of Donald and Penne (1987: 110), debtors or accounts receivable in a firm are claims held against others in the operating circle. Trade debtors are further classified into trade debtors and non-trade debtors. The amount which is owed by customers for goods and services sold in the course of carrying on a business is termed trade debtors while on the other hand any amount owed by customers arising from a variety of transactions that are oral or written promises to pay other than goods at a later date is called non-trade debtors.

Studies have shown that in the period of boom (economic boom) customers tend to make cash purchases, pay their debts on time and minimize the incidence of bad debts. On the other hand, the period of economic recession is another situation. The uncertainty, which befalls the repayment of such debts, has made the transactions to be based on customers integrity, trust worthiness and his or her ability to satisfy other conditionalities as placed by the selling organization.

b) *Reasons for Granting Credit*

Companies in the Food and Beverage Sector in Nigeria feel the necessity of granting credit for several reasons. They include:

1. Competition: Generally the higher the degree of competition, the more the credit granted by a firm (Pandey, 2004).
2. Company's bargaining power: If a company has a higher bargaining power vis-a-vis its buyers, it may grant no or less credit.
3. Marketing tool: Credit is used as a marketing tool, particularly when a new product is launched or which a company wants to push its weak product.

4. Buyers requirements: In a number of business sectors buyers/dealers are "not able to operate without extending credit. This is particularly so in the case of industrial products.
5. Buyers status: Large buyers demand easy credit terms because of bulk purchases and higher bargaining power. Some companies follow a policy of not giving much credit to small retailers since it is quite difficult to collect dues from them.
6. Relationship with dealers: According to Pandey (2004) companies sometimes extend credit to dealers to build long-term relationship with them or to reward them for their loyalty.

Efficient credit sales management is necessary for achieving liquidity and profitability of a company (Reddy and Kameswarri, 2004).

c) *Effective and Efficient Credit Policy*

According to Pandey (1993: 726), he opined that a firm's investments in receivables are effected by some external factors such as the general economic conditions: - Industry norms, competitive activities, political regulations and Technological change. But for effective management of trade debt, firms should lay down guidelines and procedures for granting credit to individual's customers and collecting the individual accounts.

Management naturally want to make efficient use of the available capital in the business and is also interested in rapid turnover of accounts. Given the circumstance, a firm should formulate a policy suitable for the firm and the commercial environment upon which credit sales will be based. There are three major credit policy variables (factors) Rama Moorthy (1976:183) V12: (i) credit standards (ii) credit term (iii) collection period/policy.

Credit standard: According to Pandey (1993:726), credit standards are the criteria, which a firm follows in selecting customers for the purpose of credit extension. He further reiterated that a firm may have light credit standards, that is, it may sell mostly on cash basis as may extend credit only to the most reliable and financially strong customers.

The implication of the above policy are many, for instance, it will result to less bad debt losses and cost of credit administration. But such a firm adopting the policy may not be able to expand sales. That is, the profit sacrificed on lost sales may be more than the cost saved by the firm on the contrary, if credit standards are loose, the firm may have large sales volume. But the firm will have to carry large receivables (debtors). The cost of administering credit and bad debts losses will also increase, thus, the choice of optimum credit standards involves a trade-off between incremental return and incremental cost.

Weston and Brigham (1986: 251), they enumerated the different types of cost associated with

credit sales. Such as: (i) cost of capital tied up in receivables (debtors), (ii) bad debts, (iii) higher investigation, (iv) collection cost.

Pandey (2004: 603). States that the evaluation of a change in the firm's credit policy involves analysis of: (i) Opportunity cost and lost contribution, (ii) Credit administration cost and bad debt losses.

According to Solomon and Pringle (1977: 201), they states that, the firm's credit policy will be determined by the trade off between opportunity cost and credit administration cost including bad debts losses. In the figure 1; this trade off occurs at point A where the total of opportunity cost of lost contribution and credit administration cost and bad debts losses is minimum.

In the words of Brain (1981), the objective of credit control is to strike a correct balance between incremental return and incremental cost.

d) Credit Analysis

Credit standards influence the quality of firm's customers. There are two aspects of the quality of customers: (i) The time taken by customers to repay credit obligation and (ii) The default rate. The Average collection Period (ACP): Determines the speed of payment by customers. It measures the number of days for which credit sales remain outstanding. The longer the average collection period, the higher the firm's investment in accounts receivable.

Default Risk: Is the likelihood that a customer will fail to repay the credit obligation.

e) Credit Qualities

The credit managers should establish criteria for evaluating credit risk. The evaluation criteria according to Brigham (1986: 260) and Emekekwe (1990: 190) they are called the Five (5) C^s thus: Character: Refers to the customers willingness to pay their obligations.

- i. *Capacity*: It refers to the customer's ability to pay. Ability to pay can be indeed by assessing the customer's capital and assets which he may offer as security.
- ii. *Capital*: It is measured by the general financial ratio analysis, with special emphasis on the risk ratios- the debt/assets ratios, current ratio and times - interest-earned ratio.
- iii. *Collateral*: This is represented by assets offered by the customers as a pledge for security of the credit extended.
- iv. *Condition*: It refers to the preventing economic and other conditions which may affect the customer's ability to pay. Adverse Economic Conditions can affect the ability or willingness of a customer to pay. An experienced financial or credit manager will be able to Judge the extent and genuineness to which

the customer's ability to pay is affected by the economic conditions.

- v. *Credit Granting Decision*: Once a firm has assessed the credit worthiness of a customer, it has to decide whether or not credit should be granted. The firm should use the Net present Value (NPV) rule to make the decision.

f) Credit Terms

These are stipulations under which the firm sells on credit to customers. They include: credit period and cash discount.

Credit period refers to the length of time for which credit is extended to customers. Cash Discount is a reduction in payment offered to customers to induce them to repay credit obligations within a specified period of time, which will be less than the normal credit period. It is usually expressed as a percentage of sales.

g) Collection Policy and Procedures

Collection policy is necessary for effective and efficient management of credit sales because customers usually default in paying their debt as at when due, that is with reference to the terms of credit. The collection policy aims at accelerating collection from slow-payers and thus reducing incidence of Bad debts losses. Credit limit is the maximum amount of credit which the firm will extend at a point of firm. Once the firm has taken a decision to extend credit to the applicant, the amount and duration of the credit have to be decided. A collection policy should ensure prompt and regular collection. Prompt collection is needed for fast turnover of working capital, keeping collection

Costs and bad debts within limits and maintaining collection efficiency. Regularity in collections keeps debtors alert, and they tend to pay their dues promptly.

Some firms usually adopt a clear-sequence to collect the debt after the expiration of the normal credit period granted to the customers; Firms may send a polite letter to the customers (as reminder). A more severe letter will follow this afterwards. Other strategies may be the use of telephones and personal visit by a company's representative. If all the above strategies fail, the firm may resort to the use of collection agency and others such as legal action, etc.

The result will be a shift of loyalty and patronage to competitors and huge sales may be lost. However, a situation where soft collection procedure is adopted, debtors may increase with profitability being reduced. Hence, a fast and hard collection procedure is not desirable for a good firm to survive.

i. Factoring and pledging of debtors accounts

Factoring is a business involving a continuing legal relationship between a financial institution (the factor) and a business concern (the client) selling goods or providing services to trade customers

(the customers) whereby the factor purchases the client's accounts receivable and in relation there to, controls the credit, extended to customers and administers the sales ledger (Pandey 204: 615).

Pledg.ing is a situation whereby the debtor's account of company may be used as a security for funds. When the lender accepts such security, the borrowing company retains the risk of default on the debts.

Liquidity: According to Solomon and Pringle (1977: 180) liquidity refers to the ability of a firm to meet its current liabilities as they fall due out of its current assets. Some common ratios connected with evaluating liquidity are the current ratio, the quick or acid ratio, debtor's turnover and inventory turnover.

Debtors Turnover Ratio: The ability of a firm to collect credit sales in a timely way affects the firm's liquidity. The debtors-turnover ratio measures the

i.e

$$(i) \text{ ROCE} = \frac{\text{Profit} \times 100}{\text{Capital employed}}$$

$$(ii) \text{ Gross profit margin (GPM)} = \frac{\text{Gross profit}}{\text{Net sales}} \times \frac{100}{1}$$

$$(iii) \text{ Net profit margin (NPM)} = \frac{\text{Net profit} \times 100}{\text{Net sale}} \times \frac{1}{1}$$

III. DATA COLLECTION AND ANALYSIS

The research work was carried out on the Food and Beverage Industries in Nigeria. The study was based on a sample of Six (6) out of sixteen (16) companies in the Food & Beverage Sector in Nigeria. A total of sixteen food and Beverage companies were quoted in the Nigerian Stock Exchange with a market capitalization of Nine Hundred and Nine Billion Forty Million Naira Only (N909, 040, 000.00). These six companies were selected for the study due to availability of their Annual Reports and Accounts of year 2007 - 2011 in the Nigerian Stock Exchange.

The research work was designed in such a way that data was generated from the annual reports and Accounts (2007 - 2011) of these companies as part of the secondary data: they include: Honey Well Hour Mills Plc, Cadbury Nig. Plc, National Salt company Nig. Plc, Nestle Nig. Plc, Multi-Trex Integrated foods Plc, and UTC Nig. Plc.

The companies in the Food and Beverage Sector were chosen for the study because of their size and wide range of products which are all over the country. To the best of the researcher's judgment, the

relative size of a firm's debtors and the success of its credit and collection policies. This ratio shows how many times on a average, the receivable turned out cash during the period. Profitability: A company's long term survival depends on its being able to earn satisfactory revenue. And such the investors will continue to remain in the business. In the words of Gee (1998), an evaluation of a firm's past earning power may give the investor a better basis for decision-making. A firm's ability to earn an income usually affects its liquidity. For this reason, evaluating profitability is important to both investors and creditors.

These ratios include: (i) Return on capital employed (ROCE) - it measures the overall profitability of a business and it shows how efficient management utilizes its resources to generate profit.

companies make a good representation of the manufacturing industry in Nigeria.

Data analysis as related to this research work involves a statistical tool in analyzing the data collected to form a basis for the hypotheses. For the test of hypotheses, a statistical non-parametric test called Analysis of Variance (ANOVA) was used because it measures or tests three or more independent means. The data are presented in the tables and the results together with the interpretation are presented below. The profitability variables are as follow:

Credit sales percentage (ESP), Gross Profit Margin (GPM), Net Profit Margin (NPM) and Return on Capital Employed (ROCE). While the Liquidity Variables are as follows: Debtors Collection Period (DCP), Debtors Turnover Ratio (DTR), Return on Current Assets (ROCA) and Acid Test Ratio (ATR).

a) Data Analysis

The data are presented in tables, collected from the annual reports and accounts of year (2007-2011) of the companies under study in the Food and Beverage sector. Data obtained were subjected to statistical analysis using Analysis of Variance (ANOVA).

Table 1 : Computed Credit Sales percentage and Profitability ratios of companies in the Food and Beverage sector (2007-2011)

Name of Company	CSP	GPM	NPM	ROCE
	(%)	(%)	(%)	(%)
Honey-Well Flour Mills PLC.	3	11	5	13
Cadbury Nig. PLC.	7	26	5	11

National Salt Co. Nig. PLC.	7	31	19	36
Nestle Nig. PLC.	7	35	16	58
Multi-Trex Integrated Foods PLC.	8	27	18	15
UTC Nig. PLC.	7	34	13	21

Source : Annual Reports and Account of the Various Companies for year (2007-2011)

Where:

CSP = Credit Sales Percentage (Average Credit sales % for 5 years).
 GPM = Gross Profit Margin (Average Gross Profit Margin for 5 Years).
 NPM = Net Profit Margin (Average Net Profit Margin for 5 years).
 ROCE = Return on Capital Employed (Average ROCE for 5 years).

Table 2 : Computed Liquidity and activity ratios of companies in the Food and Beverage sector (2007-2011)

Name of Company	DCP	DTR(%)	ROCA(%)	ATR
Honey-Well Flour Mills PLC.	9	25	29	1.38
Cadbury Nig. PLC.	7	29	30	1.25
National Salt Co. Nig. PLC.	8	28	31	1.66
Nestle Nig. PLC.	6	34	40	1.38
Multi-Trex Integrated Foods PLC.	4	31	34	1.32
UTC Nig. PLC.	3	35	31	1.33

Source : Annual Reports and Accounts of the Various Companies for year (2007-2011).

Where:

DCP = Debtor's collection period (Average collection period for 5 years).
 DTR = Debtor's turnover ratio (Average DTR for 5 years).
 ROCA = Return on current assets (Average ROCA for 5 years).
 ATR = Acid test Ratio (Average ATR for 5 years).

b) Hypotheses Testing

i. Hypothesis One

Null Hypothesis (Ho): There is no significant relationship between effective management of credit sales and operating profit of the Food and Beverage Industries in Nigeria.

Alternative Hypothesis (H1): There is significant relationship between effective management of credit sales and operating profit of the Food and Beverage Industries in Nigeria.

The above hypothesis was tested using data presented in table 1.

Table 3 : Analysis on the relationship between credit sales and operating profit in the Food and Beverage Industries in Nigeria using ANOVA Statistical Tool

	Honey Nell Flour Mills PLC.	Cadbury Nig Plc	National Salt Co. Nig PLC	Nestle Nig PLC.	Multi-Trex Integrated Foods Plc.	UTC Nig PLC.	TOTAL
CSP	3	7	7	7	8	7	
GPM	11	26	31	35	27	34	
NPM	5	5	19	16	18	13	
ROCE	13	11	36	58	15	21	1.
ΣX	32	49	93	116	68	75	433
$\bar{X}$	8	12.25	23.25	29	17	18.75	108.25
ΣX^2	324	871	2667	4894	1342	1815	11,913
$\dots$ $\bar{x}^2$	64	150	541	841	289	352	2237

Source : Researcher's Field Work, 2012.

$$\text{Grand Mean } (\bar{X}) = \frac{\sum X}{n} = \frac{433}{24} = 18.04$$

$$\begin{aligned} \text{Total sum of squares (TSS)} &= \sum X^2 - \frac{(\sum X)^2}{n} = 11913 - \frac{(433)^2}{24} \\ &= 11913 - 7812.04 = 4,100.96 \end{aligned}$$

$$\begin{aligned} \text{Treatment Sum of Squares (TRSS)} &= M (\sum X^2 - j(\frac{\sum X}{n})^2) \\ &= 6[2237 - 4 \frac{(433)^2}{24}] = [2237 - 1953] \\ &= 1,704 \end{aligned}$$

$$\begin{aligned} \text{Error Sum of Squares (ESS)} &= \text{TSS} - \text{TRSS} = 4100.96 - 1704 \\ &= 2396.96 \end{aligned}$$

Table 4 : ANOVA

Source of Variation	Sum of Squares (SS)	Degree of Freedom DF	Mean Squares (MS)	F-Value (F5%, V, V2)
Treatment (Between Samples)	TRSS = 1704	r-1=4-1=3	$\frac{1704}{3} = 568$	$\frac{\text{TRMS}}{\text{EMS}}$
Error (Within Samples)	ESS = 2396.96	n-r=24-4=20	$\frac{2396.96}{20} = 119.85$	$\frac{568}{119.85} = 4.74$
TOTAL	TSS = 4100.96	n-1 = 24-1 = 23		

Source : Researcher's Field Work, 2012.

From the above table, the calculated F Value is 4.74 at 5% level of significant, V₁ = r-1=4-1=3, V₂ = n-r=24-4=20
F_{0.05, V₁, V₂}

Therefore, (F_{0.05, 3, 20}). Tabulated F Value is 3.10.

c) Interpretation/Decision

The result shows that the calculated Value of F (4.74) is greater than the Tabulated value of F (3.10) at 5% level of significance. Therefore, the researcher rejected the null hypothesis and accepted the alternative hypothesis. Thus, there is significant relationship between effective management of credit sales and operating profit of the companies in the Food and Beverage Sector in Nigeria.

i. Hypothesis Two

Null hypothesis (H₀): There is no significant correlation between liquidity position and debtors

turnover of the companies in the Food and Beverage Sector in Nigeria.

Alternative Hypothesis (H₁): there is significant correlation between liquidity position and debtors turnover of the companies in the Food and Beverage Sector in Nigeria.

The above hypothesis was tested using data presented in table 2.

Table 5 : Analysis on the correlation between liquidity position and debtors turnover in the Food and Beverage industries in Nigeria

Liquidity/Activity Variables	Honey Well Flour Mills Plc	Cadbury Nig. Plc	National Salt Co. Nig Plc	Nestle Nig. Plc.	Multi- Trex Integrated Foods Plc	UTC Nig. Plc	TOTAL
DCP	9	7	8	6	4	3	
DTR (%)	25	29	28	34	31	35	
RPCA (%)	29	30	31	40	34	31	
ATR	1.38	1.25	1.66	1.38	1.32	1.33	
$\sum X$	64.38	67.25	68.66	81.38	70.32	70.33	422
$\frac{\sum X}{n}$	16.10	16.81	17.17	20.35	17.58	17.58	106

$\sum x^2$	1548.90	1791.56	1811.76	2793.90	2134.74	2196.77	12278
$\sum x^2$	259	282.66	294.64	413.92	309.06	309.14	1868

Source : Researcher's Field Work, 2012.

$$\text{Grand Mean (X)} = \frac{\sum X}{n} = \frac{422}{24} = 17.58$$

$$\text{Total Sum of Squares (TSS)} = \sum X^2 - \frac{(\sum X)^2}{n} = 12278 - \frac{(422)^2}{24} = 4857.83$$

$$\begin{aligned} \text{Treatment Sum of Squares (Trss)} &= M [\sum X^2 - j \frac{(\sum X)^2}{N}] \\ &= 6 [1868 - 4 (17.58)^2] = [1868 - 1236.23] \\ &= 3,790.62 \end{aligned}$$

$$\begin{aligned} \text{Error Sum of Squares (ESS)} &= \text{TSS} - \text{Trss} \\ &= 4857.83 - 3790.62 \\ &= 1067.21 \end{aligned}$$

Table 6 : ANOVA

Source of variation (SOV)	Sum of squares (SS)	Degree of Freedom (DF)	Means Squares (MS)	F value (Fx, V ₁ , V ₂)
Between Samples (Treatment)	TRSS = 3790.62	r-1=4-1=3	$\frac{\text{TRSS}}{4} = \frac{3790.62}{3}$	$\frac{\text{TRMS}}{\text{EMS}}$
Within Samples (Error)	ESS = 1067.21	n-r=24-4=20	$\frac{\text{ESS}}{\text{DF}} = \frac{1067.21}{20}$	= 126
Total (TSS)	TSS = 4857.83	n-1=24-1=23		

Source : Researchers Field Work, 2012.

At 5% level of significant, Degree of Freedom V₁ = 3, V₂ =20 the Tabulated Value of F is 3.10.

d) Interpretation/Decision

The table above, depicts that the calculated value of F (23.68) is greater than the tabulated value of F (3.10). Therefore, the researcher rejected the null hypothesis and accepted the alternative hypothesis.

Thus, there is significant relationship between liquidity position and debtors' turnover of the companies in the Food and Beverage Sector in Nigeria.

IV. SUMMARY AND CONCLUSION

Summary of findings: This research work has evaluated the impact of effective management of credit sales on profitability and liquidity of Food and Beverage Industries in Nigeria. From the analysis carried out in this study, the researcher summarizes his findings as follows:

Effective management of credit sales has a positive relationship with the operating profit of the companies in the Food and Beverage Sector. This implies that for companies to maximize their profit, they should grant credit to trustworthy customers with an appropriate credit control mechanism. It was also discovered that credit sales increase turnover and profitability in the domains of effective implementation of optimum credit policy in the firms.

It is now obvious that firms having optimum credit policy help in eliminating bad debts losses and other associated costs of credit.

There is significant relationship between liquidity position and debtors turnover of the companies in the Food and Beverage Sector in Nigeria. This implies that a favourable debtors turnover would result to favourable liquidity position. The high debtors turnover has a positive effect on the firm's ability to satisfy obligations to its own creditors. That is, tight debtors collection policy and procedure would minimize the problem of cash flow and liquidity. Due to the effective credit policy in these firms, their financial ratios indicate adequate working capital and liquid assets. The positive correlation between liquidity and debtors turnover signifies that as the debtors turnover rises, the liquidity position also rises.

There is need for companies to maintain adequate liquid assets and eliminate bad debt losses and other associated costs of credit.

The study also revealed that the objective of any firm's credit policy is to maximize profit of the firm and at the same time minimize costs associated with credit sales.

V. CONCLUSION

Based on the research findings of the study, the researcher draws the following conclusions.

The companies in the Food and Beverage Sector succeeds in their credit policy administration because they strike a correct balance (trade-off) between the total of opportunity costs/lost contribution and credit administration costs and bad debts losses at minimum which improves the overall profitability, efficiency and survival of the firms.

The companies in the Food and Beverage Sector maintain a desirable level of liquidity due to their optimum credit standards, terms, collection period and procedures; and they are regularly revisited and adjusted.

The Food and Beverage Industries maximized their operating profit due to effective management of credit sales. The operating profit of any firm is a function of sales or turnover.

Among the reasons for granting credit to customer are competition, market tool to expired sales, relationship with dealers, buyer's status, and requirements. Etc.

There is no particular recommended credit policy for organizations (Schilling, 1996); credit policy should therefore be established considering factors as the nature of the firm's business, its share of the market, its immediate external environment and level of competition.

VI. RECOMMENDATION

From the findings of this research, the following recommendations are made: Management of organizations should ensure the development of adequate and efficient credit policy for their organizations. In order to achieve desired results. Organizations should consider their mission, the native of their businesses, and their business environment before setting up a credit policy and the credit policy should not be disregarded after it is created.

Companies should intensify efforts to engage the services of factoring agents. This will reduce the incidence of bad debts losses and other associated costs of credit.

Companies should increases the rate of credit sales to trustworthy customers only despite the fact that credit sales is a marketing tool to maintain or expired sales.

Firms should monitor, review and adjust credit policy from time to time considering the nature of their business and mission.

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Achieving Sustainable Competitive Advantage Through Service Quality: An Analysis of Pakistan's Telecom Sector

By Khalid Mehmood Warraich, Imtiaz Ahmad Warraich & Muhammad Asif

Bahauddin Zakariya University, Multan-Pakistan

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Methodology: Cross-sectional study design was used as a methodology for the paper. A field survey was carried out with the help of questionnaire using SERVQUOL scale. 400 current users of cell phone were targeted for the purpose of data collection through convenient sampling.

Findings: The study found that telecom industry received excellent rating on tangibility, particularly equipment and customer service staffs' dress, and low ratings on empathy, particularly not knowing customers' needs and not giving individual and personal attention to customers.

Research Implications: SERVQUOL is a good starting point for assessing service quality. Service delivery system should produce moments of truth where different cues expressed by customers about quality must be assessed promptly.

Originality: The study has a practical significance for policy makers of firms in telecommunication sector of Pakistan for understanding behavioral intentions of their customers and for effectively positioning their firm's service quality.

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Limitation and Future Research: This study only assessed the functional dimension of the service quality to explain consumer behavior which might be misspecification of service quality and may have low predictive validity.

1. INTRODUCTION

Sustaining competitive advantage is the challenge faced by many businesses in today's fast paced world. Service quality is a topic frequently studied in the field of services marketing, both by academicians and practitioners. But little attention has been given towards the ability of service quality in achieving and sustaining a competitive advantage. Service organizations, without regards for size, are increasingly seeking the unique ways of differentiating their offering and service quality is one such option in this regard. Many organizations, today, have responded to the strategic and financial impact of quality, treating it as a strategic weapon (Paradise-Tornow, 1991). Along with globalization, the influence of quality on service is the most intense trend affecting management and marketing of services in today's dynamic world. Better

service delivery helps firms in differentiating their offering; obtaining more business from current customers; and attracting new customers (Mukherjee et al., 2003).

Although the relationship between service quality and profit has been considered neither to be simple nor straightforward (Greising, 1994; Zahoric and Rust, 1992), a sizeable mass of services literature has tried to ascertain the connection between service quality and different parameters of firm performance (Ittner and Larcker, 1998). It has become increasingly important for firms to choose the most appropriate measures of service quality because it indicates the level of customer satisfaction and their tendency of returning to the same service provider (Young et al., 1994). Customers that are satisfied, spread the good news quickly (Edvardsson 1998).

It has become necessary for the survival of the firms that they keep themselves ahead of the competitors by continuously differentiating their service offerings. Globalization of the world markets, technological advancements, and increased economic cooperation are compelling companies to be more sophisticated and savvy in their marketing efforts (Ueltschy and Krampf 2001). With so many changes occurring in Pakistan telecom sector, including market expansion, intensification of competition, and increasing sensitivity of consumers, the issue of service quality has gained substantial consideration.

The objective of this study is to analyze whether service quality confers a competitive advantage to firms competing in the telecom sector of Pakistan. This study compares the level of service quality of different firms as being perceived by their consumers. The study further examines the customer behavioural intentions as indicator of sustainability of the competitive advantage. The research paper is organized as follows: first, an overview of the service quality is presented followed by the competitive advantage and sustainability of the competitive advantage, then research methodology and results of the study are presented. Finally, the study concludes with a discussion of managerial implication, research limitations, and directions for future research.

Author ^α : Bahauddin Zakariya University, Multan-Pakistan.

II. COMPETITIVE ADVANTAGE

It has become increasingly necessary for the survival of the firms to remain ahead of the competitors and predators by differentiating themselves. Creating and sustaining competitive advantage is one way of achieving this goal (Colgate, 1998). Success of the businesses lies in their ability to possess some advantage relative to their competitors. Achieving this competitive advantage is the objective of strategy and the superior performance will automatically result from a competitive advantage (Day, 1994; Porter, 1996). According to Reed and DeFillipi (1990), the sources of competitive advantage are as numerous as activities in the firm. Strategies through which corporations can gain competitive advantage include higher quality, innovation, lower cost, improved processes, and marketing (Rijamampianina *et al.*, 2003). Competitive advantage results either by implementing a value creating strategy not being implemented by the competitors (Barney, 1991) or through superiorly executing the same strategy as competitors (Johnson and Sirikit, 2002).

The story just does not end at achieving a competitive advantage, rather prolongs till the sustainability. Even if businesses have achieved the competitive advantage and gained higher profitability, competitors are quick to imitate their strategies or even enhance their initiatives, thus resulting in loss of competitive advantage (Reed and DeFillippi, 1990; Markides, 1997; Porter, 1996; Ghemawat, 1986). Even more, competitors are able to obtain through information on seventy percent of all new products within a year of their development (Ghemawat, 1986). The solution to such problems lies in the sustainability of the competitive advantage.

a) Sustaining a Competitive Advantage

Significant investment and efforts are required to raise barriers preventing imitation by competitors would ensure sustainability of the competitive advantage. When a firm has achieved competitive advantage and raises the barriers that prevent competitors to imitate, it thus "resists erosion by competitor behavior" and achieves sustainability of the competitive advantage. Though, preventing imitation forever is not possible. Thus, it is necessary for the firms to have the ability to delay this possibility so as to yield maximum benefit from any competitive advantage (Porter, 1996; Reed and DeFillipi, 1990; Christensen, 2001).

Competitive advantage is achieved through the way activities of a firm fit and reinforce one another (Porter, 1996; Campbell and Goold, 1995). Fit is essential for sustaining a competitive advantage (Rijamampianina *et al.*, 2003). Competitors trying to imitate a firm with an arrangement of interconnected

activities (fit) will have to reconfigure many of their activities for competing effectively, thus creating a tough imitation barrier (Porter, 1996).

Managers are increasingly facing tremendous pressures to improve service quality by every means so that not only existing customers remain loyal but also new customers become permanent customers (Yang and Chen, 2000). Fulfilling customer needs every time on time is the itinerary to achieving and sustaining competitive advantage and service quality is a tool that companies can use to comprehend this objective. While many companies recognize the need for higher service quality, unfortunately not all of them connect service quality as a tool for achieving and sustaining a competitive advantage. There is growing proof that how customers' behavioral intentions are affected by their perception of service quality. Specific consumer behavioral responses present a clear signal that they are becoming bound to the company (Johnson and Sirikit, 2002). Intentions to behave are a result of previous experience with the service or the information consumer has received about the service. A range of intended behaviors include repeat purchases, recommending to other, complimenting, complaining, switching the service provider, and opting not to use any service at all (Johnson and Sirikit, 2002). A customer having positive experience would choose to purchase repeatedly, recommending, and complimenting.

b) Service Quality

The construct of service quality has attracted the attention of academicians and practitioners alike because of its function as a guide towards achieving customer satisfaction and better organizational performance (Lewis and Mitchell 1990). Service quality has been defined as an attitude resulting from the comparison of expected levels of service with perceived performance (Cronin and Taylor, 1992; Bolton and Drew, 1992; Parasuraman *et al.*, 1988). Most of the service quality definitions converge on a point of meeting customer needs and wants (Ueltschy and Krampf 2001). A commonly accepted definition of service quality is that it should match customer's expectations and satisfy needs and requirements of customers (Edvardsson 1998). Gronroos (1982) was the first to define service quality as "the outcome of an evaluation process where the consumer compares his expectations with the service he perceived he has received." According to Parasuraman *et al.* (1991), service quality refers to the comparison between level of service desired and the level received. Perceived service quality has been treated as valuable element by Zeithmal (1988) and he defines it as "the consumer's judgment of a product's overall excellence or superiority".

Many researchers have recommended that quality results from a comparison of perceived

performance with expected performance – based on the so-called “disconfirmation paradigm”. Based on this concept, Parasuraman *et al.* (1988) developed the SERVQUAL model, which views service quality as the gap between the level of service customers expect and the their perception of the level of service they received. Much of the research measuring service quality, to date, has focused using SERVQUOL. Consequently, research using this instrument has been commonly cited in marketing literature and its industrial use has become extremely prevalent (Brown *et al.*, 1993). Five determinants of the service quality are identified in SERVQUOL model:

- 1) Tangibility;
- 2) Reliability;
- 3) Responsiveness;
- 4) Assurance; and
- 5) Empathy;

Tangibility means the physical elements of the facility; equipment, customer service staffs and their dresses, premises, i.e. something that is easily observable by the customers. Reliability is the ability of the company to fulfill its commitments as promised. Responsiveness refers to executing services punctually and promptly, willingness and readiness to serve customers whenever they need assistance. Assurance means customer service staffs' competence and knowledge and their ability to maintain trust and confidence. Empathy refers to the service provider's ability to give individual and personal attention and providing convenience.

Although the prior work on the instrument has advanced our knowledge of measuring service quality, the instrument has also yielded some criticism. One criticism of the instrument has been the point that SERVQUOL mainly focuses on the process of service delivery (Richard and Allaway, 1993; Mangold and Babakus, 1991). But, at the same time, a lot of support in favor of the instrument is available from a variety on researchers. According to Berry *et al.* (1994), SRVQUOL has the ability to serve as an effective investigating tool that can guide management in its efforts to improve

service quality by focusing attention in the most needful areas.

c) Data Collection and Analysis

Cross sectional design was used for this study to examine the service quality perceptions and their competitive analysis in Pakistan telecom sector. Service quality ratings were obtained using SERVQUOL, which has already been discussed. The questionnaire used for this study was adapted from Johnson and Sirikit (2002), which were constructed originally in English and then translated into Urdu by an expert of the language in order to ensure that local expressions were properly stated.

Respondents for this research were selected using convenient sampling. The respondents were the current users of any of the five companies providing cell phone services in Pakistan including Mobilink (Mob), Ufone (Ufon), Warid (War), Telenor (Tel), and Zong (Zon) and were approached conveniently in shopping centers of the urban areas of Pakistan. Of the 400 questionnaires distributed, 338 were collected back. Some of the questionnaires were not filled properly or were having a lot of missing values so 26 questionnaires were rejected for these reasons and 312 usable questionnaires were entered in SPSS further analysis, thus ensuring 78 percent of the response rate.

Of the 320 questionnaires used for the analysis, 63 percent of the respondents were male and female respondents were just 37 percents. This study aimed to have equal response both from male and female users but this was because of cultural norms that many of the women were reluctant to respond because being there with their families. The respondents ranged altogether from 18 years till 63 years but majority of them were the young users and average of the respondents was slightly above 25 years as shown in table 1. Table 1 further explains the service providers of various respondents. The study aimed to collect equal response from the consumers of all service providers but as stated earlier respondents were selected conveniently, that's why difference in number of respondents from various service providers is seen.

Table 1 : Characteristics of the Respondents

Gender	Male	197	63%
	Female	115	37%
Average Age of the Respondents	25.29 Years		
Service provider of the Respondents	Mobilink	88	28%
	U Fone	94	30%
	Warid	32	10%
	Telenor	52	17%
	Zong	46	15%

III. RESULTS

The first matter that needed to be addressed was the answer to the question that whether SRVQUOL

can measure the service quality perceptions of cell phone users in telecom sector of Pakistan. The reliability measure of the scale, for this purpose, was assessed

using Cronbach's alpha. The reliability measures for all the categories of the scale ranged from 0.73 to 0.79, thus ensuring high reliability for all service quality measures.

The ability of service quality to be considered as a source of competitive advantage was the basic objective of this study. Parasuraman *et al* (1988) suggested that service quality can be used as a source for competitive advantage. For this purpose, behavioral intentions of the consumer of all the companies were tested in order to be able to draw comparative analysis of the users of different service providers.

Before making any comparative analysis regarding any of the service providers, it seems

important to address the service quality measures of the overall telecom industry. As shown in Table 1, tangibility is the dimension of service quality that yielded maximum score which is also supported by Johnson and Sirikit (2002), closely followed by reliability which according Zeithmal *et al*. (1990) is extremely important dimension. The dimension having the lowest rating is empathy which scored the least score. The measures of empathy are also congruent with the research results of Johnson and Sirikit (2002). The maximum scores of service quality perceptions are considered as a basis for competitive advantage (Johnson and Sirikit, 2002).

Table 2 : Service quality assessment of the industry

Service Quality Measures	Results
Tangibility	3.6436
Service provider has up-to-date equipment	3.7821
service provider's physical facilities are visually appealing	3.3910
My service provider's customer service staffs are well dressed and appear neat.	3.7885
The appearance of the physical facilities of the firm is in keeping with the type of telecom services.	3.6090
Reliability	3.5474
When my service provider promises to do something by a certain time, it does so.	3.3974
When I have problems, my service provider is concerned and supportive.	3.7885
My service provider is dependable.	3.2628
My service provider provides its services at the time it promises to do so.	3.6795
My service provider keeps its records accurately.	3.6090
Responsiveness	2.9471
My service provider does not tell exactly when services will be performed.	3.0128
I do not receive prompt service from customer service staff.	2.7821
Customer service staffs are not always willing to help customers.	2.6859
Customer service staffs are too busy to respond to customer requests quickly.	3.3077
Assurance	3.5903
I can trust customer service staff.	3.4452
I feel safe in my transactions with customer service staff.	3.5355
Customer service staffs are polite.	3.8323
Customer service staffs get adequate support from a service provider to do their job well.	3.5484
Empathy	2.8955
My service provider does not give me individual attention.	2.8387
Customer service staffs do not give me personal attention.	2.8903
Customer service staffs do not know what my needs are.	2.7613
My service provider does not have my best interests at heart.	2.9290
My service provider does not have operating hours convenient to all its customers.	3.0581

Table 3 shows the results of complete analysis of service quality measures which is a mix plate. This comparative analysis among telecom companies offers several insights on competitive advantage. Warid is having competitive advantages of reliability and responsiveness, U Fone having reliability and

assurance, Zong having tangibility, and Mobilink enjoys competitive advantage of empathy. Telenor is a company without any competitive advantage in this scenario. Companies having these competitive advantages need to strengthen these advantages so that they sustain over a longer period of time.

Table 3 : Competitive Assessment of Service Quality

Service Quality Measures	Mobilink	U Fone	Warid	Telenor	Zong
Tangibility	3.6989	3.6064	3.5781	3.5769	3.7283
Service provider has up-to-date equipment	3.7273	3.8085	3.9375	3.7308	3.7826
service provider's physical facilities are visually appealing	3.4318	3.3191	3.3750	3.2692	3.6087
My service provider's customer service staffs are well dressed and appear neat.	4.1136	3.5319	3.6875	3.7692	3.7826

The appearance of the physical facilities of the firm is in keeping with the type of telecom services.	3.5227	3.7660	3.3125	3.5385	3.7391
Reliability	3.5955	3.6766	3.6750	3.4538	3.2087
When my service provider promises to do something by a certain time, it does so.	3.5682	3.4468	3.5625	3.4615	2.7826
When I have problems, my service provider is concerned and supportive.	3.5455	4.5532	3.7500	3.4615	3.0870
My service provider is dependable.	3.5455	3.3191	3.1250	3.0385	2.9565
My service provider provides its services at the time it promises to do so.	3.6136	3.5745	4.0000	3.6538	3.8261
My service provider keeps its records accurately.	3.7045	3.4894	3.9375	3.6538	3.3913
Responsiveness	3.0455	2.8989	2.7500	3.0000	2.9348
My service provider does not tell exactly when services will be performed.	3.1364	2.8723	2.8125	3.0769	3.1304
I do not receive prompt service from customer service staff.	2.9545	2.6809	2.6250	2.8462	2.6957
Customer service staffs are not always willing to help customers.	2.7045	2.6809	2.3750	2.8077	2.7391
Customer service staffs are too busy to respond to customer requests quickly.	3.3864	3.3617	3.1875	3.2692	3.1739
Assurance	3.6105	3.6968	3.5469	3.5096	3.4565
I can trust customer service staff.	3.5349	3.5532	3.6250	3.1538	3.2609
I feel safe in my transactions with customer service staff.	3.6279	3.6809	3.4375	3.3846	3.3043
Customer service staffs are polite.	3.7209	3.9574	3.8125	3.8462	3.7826
Customer service staffs get adequate support from a service provider to do their job well.	3.5581	3.5957	3.3125	3.6538	3.4783
Empathy	3.0977	2.9532	2.6500	2.8077	2.6696
My service provider does not give me individual attention.	2.9535	2.9362	2.3750	2.6154	3.0000
Customer service staffs do not give me personal attention.	3.0930	2.8936	2.8125	3.0769	2.3478
Customer service staffs do not know what my needs are.	3.0233	2.8723	2.3750	2.7308	2.3478
My service provider does not have my best interests at heart.	3.2093	3.0213	2.8750	2.5769	2.6522
My service provider does not have operating hours convenient to all its customers.	3.2093	3.0426	2.8125	3.0385	3.0000

Customer behavior intentions, as shown in Table 4, were also assessed as antecedents of customer behavior in future. Four different dimensions of customer behavioral intention were addressed for the purpose of this study. Warid which had competitive advantages of reliability and responsiveness enjoys the customer purchase intentions and positive word-of-mouth which can be extremely beneficial for not only attracting the new customers but also for retaining the

current ones. Four different dimensions of customer behavioral intention were addressed for the purpose of this study. The complaining behavior of customer as a dimension of behavioral intention must not be ignored by the managers of these telecom companies. Almost all the customers are having equal intentions for complaining in case desired service levels are not delivered.

Table 4 : Competitive Assessment of Customer Behavioural Intentions

Customer Behavioral Intentions	Mobilink	U Fone	Warid	Telenor	Mean
Word-of-mouth	3.4767	3.5532	3.8125	3.4808	3.3261
I recommend my service provider to someone who seeks my advice.	3.3023	3.6809	3.6250	3.3077	2.6522
I encourage my friends and relatives to use services of my service provider.	3.6512	3.4255	4.0000	3.6538	4.0000
Purchase Intentions	3.3953	3.2536	3.4375	3.1154	3.1014
I consider my service provider as my first choice to buy cellular services.	3.4884	3.5319	4.1875	3.3462	3.1304
I intend to have more usage of my service provider in next few months.	3.4419	3.3191	3.4375	3.2692	3.3478
I intend to have less usage of my service provider in next few months.	3.2558	2.9130	2.6875	2.7308	2.8261
Price Sensitivity	3.2946	3.0213	3.0000	3.2179	3.1594
I intend to take some of my usage to a competitor that offers better prices.	3.4884	3.4255	2.9375	3.2692	3.4783
I intend to continue using services of my service provider even if its prices increase to some extent.	3.0930	2.6596	3.1250	3.4615	3.2174
I pay higher prices than competitors charge for the benefits I currently	3.3023	2.9787	2.9375	2.9231	2.7826

receive from my service provider.					
Complaining Behaviour	3.5000	3.4628	3.0625	3.3750	3.5109
I will switch to a competitor if I experience a problem with cellular services.	3.5349	3.5745	3.1250	3.3846	3.4348
I will complain to other customers if I experience a problem with cellular services.	3.4884	3.2128	2.7500	3.3462	3.5217
I will complain to external agencies like PTA/Consumer Courts if I experience a problem with cellular services.	3.3721	3.2553	3.0000	2.9615	3.6522
I will complain to my service provider's customer service staffs if I experience a problem with telecom services.	3.6047	3.8085	3.3750	3.8077	3.4348

IV. CONCLUSION AND RECOMMENDATIONS

Assessing service quality in sector of Pakistan telecom service setting has proved to be reliable which means that we can base service quality measurements on SERVQUOL. The five original service quality dimensions were exceptionally reliable and vigorous. Cronin and Taylor (1992) have argued on the multidimensionality of the service construct. Richard and Allaway (1993) has further argued that utilizing functional dimension of quality only to explain and predict consumers' behavior might be a misspecification of service quality and have low predictive validity. Yet, SERVQUOL seems to be a good starting point but managers must watch closely for exceptional situations requiring adaptation specific to situation. The companies need to be more caring for their customers as the results of the study revealed low measures for empathy. The industry overall received strong ratings on tangibility dimension of the service quality.

Moreover, the research has tried to relate the service quality ratings to customer behavioural intentions. SERVQUOL can be used to determine whether the service activities match customer expectation, exceed expectations or fall short. Thus, ensuring that managers can utilize SERVQUOL as a starting point of quality assessment with confidence. As was stated earlier that SERVQUOL only measures the functional dimensions of the service quality, we would accentuate that SERVQUOL seems to be better suited for process-driven service firms like telecom, health care, banking, retailing etc. (Johnson and Sirikit, 2002). Managers must always be in better condition to analyze the signals given by customers about their consumption experience and perception of service quality.

Results of this study imply that such a service delivery system should be designed that promotes customers expressing their valuable experiences that can enable managers to address deficiencies and strengthen the practices valued by customers. Personnel involved in the value delivery process must be made aware of the role they are playing through continuous reinforcement and training. Sufficient staffs should be deployed during peak hours in order to ensure optimal service delivery all the time as the results of sector show low measures for empathy.

Finally, service quality should be assessed on continuous basis. The first assessment can serve as a baseline for making further comparison and a benchmark on which companies can gauge their efforts for service improvement.

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An Assessment of the Impact of Contributory Pension Scheme to Nigerian Economic Development

By Edogbanya, Adejoh

Kogi State University, Anyigba

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GJMBR Classification : *JEL Code: 160505*



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Keywords : pension, contributions, economic, development.

1. INTRODUCTION

a) Background of the Study

An employee who has worked for an organization for some years is entitled to some benefits which could be in form of gratuity and pension payable to such employee by its employer at the time of retirement. Pension is viewed as a sum of money paid regularly to a person who no longer work because of old age, disability or retirement or to his widowed or dependent children by the state, former employers or from provident fund to which he and his employer both contributed.

The pension system prior to 2004 was characterized with many problems which make the payment of the retirement benefit a failure in Nigeria. Koripamo-Agari (2009) and Yunusa (2009) pointed out that the major weaknesses of pension scheme was lack

of adequate and timely budgetary provision coupled with rising life expectancy, increasing number of employers, poor implementation of pension scheme in the private sector due to inadequate supervision and regulation of the system and too many private sector employees were not even covered by the form of pension scheme.

These problems associated with payment of pension in Nigeria necessitated the government during Obasanjo regime could be reformed or reviewed which gave birth to the pension reform Act of 2004. Elumelu (2005) posits the 2004 Pension Reform Act established a uniform contributory; private sector managed and fully funded pension system for both the public and private sector of the country.

The Pension Reform Act 2004 was also established to address the manifested loopholes in the old defined benefit pension scheme and provide adequate resources to retirees after retirement from the service. The large capital pool demands that there should be sound and uniform investment decision making to ensure that value is added to Retirement Saving Account (RSA) contribution. Investment is normally done in the presence of numerous risk mostly political, markets and economic in nature. Investment and market analysis of these Pension Fund Administrators (PFAs) are always propelled to ensure that there is safeguard and safety of these pension assets. The fund accounting organ of PFAs record every bit of inflow and outflow of pension assets in and out of the entity fund.

The aim of the research paper is to assess primarily, the impact of investment decision on pension assets in the modern contributory pension scheme in Nigeria taking Legacy Pension Manager Ltd, Abuja, 2010, as a reference of the study.

b) Statement of the Problem

Although the new reform is guided by the key principles of sustainability, accountability, equity, flexibility and practicability, there is also this fear that funds or Retirees Savings Account (RSA) contributory can be mismanaged by the existing trustees. Also, risk of a given portfolio determines the return thereof. Some pension fund administrators do not have the necessary risk management profile while some fail to pay regard to

Author : Department of Accounting Faculty of Management Sciences
Kogi State University, Anyigba, Kogi State, Nigeria.
E-mail : Adejoh17@yahoo.com

rating signals needed to making sound investment decision.

The decision of investment managers of the pension fund administrators who are responsible for this process impact greatly on the contribution value due to employees (fund owners). Sound investment and efficient management of the huge pension fund assets has great implication on the economy. The spread of large accumulated fund to the capital and money markets are employment opportunities creation.

From the forgoing, the following specific problems will be studied:

- The impact of fund investment and management on the contributory fund and the Nigeria economy as a whole.
- The status of the fund assets regulation and framework.
- The nature and effect of risk prevailing in the pension assets.
- Monitoring and documentation of status report by the contributors.

c) *Objectives of the Study*

The main objective of this study is to assess the investment and management of contributory pension scheme fund with a view to determining its contribution to the economy through the investment of excess pool of fund in the capital and money markets and creation of employment opportunities.

The specific objectives are:

- i. To examine how Contributory Pension Scheme influence the Gross Domestic product (GDP).
- ii. To examine how the risk prevalent in pension fund investment affects pension management.

d) *Research Questions*

- i. How does contributory pension scheme influence Gross Domestic product (GDP) in Nigeria?
- ii. To what extent risk prevalent in Pension Fund Investment affect Pension Management in Nigeria?

e) *Research Hypothesis*

i. *Hypothesis I -*

H_0 : Contributory Pension Scheme has no significant and Positive effect on Gross Domestic Product (GDP).

ii. *Hypothesis II -*

H_0 : The Risk Prevalent in Pension Fund Investment has no significant Effect on Pension Management.

f) *Significance of the Study*

Every country faces many choice is dealing with micro and macro-economic issues. These choices are made daily in more or less coordinated ways with a long or short term perspective. The Pre-pension Reform Act

2004 was a "Pay As You Go" (PAGA) pension scheme faced with a lot of challenges that gave birth to the new contributory pension scheme. The significance of this work therefore can never be overemphasized as it will avail the stakeholders the necessary and basic understanding on how their mutual interests are protected.

The contributors would have a grasp of how their Retirement Savings Account (RSA) funds are managed by Pension Fund Administrators (PFAs) and safe custody by Pension Fund Custodians (PFCs) and its effect on the economy.

It is also of importance to Pension commission, PENCOM and the government at different levels as it provide avenue to overcome the short-comings in the modern system.

New pension scheme came into existence in 2004. Consequently, this is undoubtedly a new horizon that calls for detailed research. Pension fund accounting us a new area that needs input from scholars, hence, this study will help other researchers with interest in pension.

g) *Scope of the Study*

This study is on the issue of pension administration in Nigeria from 2005 to 2010. However, the area of coverage of the study of Contributory Pension Scheme, its operation and problems, provisions, operation mechanisms and most centrally, the management of contributory fund and its effect on the economy. Specifically, the work will be restricted to new pension scheme: Contributory Pension Scheme with particular reference to pension fund administrator, taking Legacy pension as a case study.

h) *Limitation of the Study*

The major limitation experienced in this study is the Pension Fund Administrators itself. Most of the information provided by the Legacy Pension Manager required explanation as to the reason behind such activities and actions. Nevertheless, there is always solution to a problem the problems were to an extent surmounted.

There is also a limitation to textbooks, Journals and other materials in the library which are relevant to the research work. I have to source for some materials outside the library.

In addition, there was insufficient time for the study. In fact, it is very difficult for a student to go for a research work at the detriment of his lectures. This affects the expected quality of the research work.

Furthermore, inadequate finance has an effect on this research work due to the current situation of the economy which makes prices of things very high viz-a-vis the cost of transportation the pension fund administrator to obtain relevant materials to this research work were very expensive.

However, the challenges were brought under control to ensure the success of this work.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

a) Literature Review

In the view of Ndebbio (2000), financial deepening means an increase in the supply of financial assets in the economy and therefore the sum of all the measures of financial assets gives us the approximate size of financial deepening. From this, it is suggested that the financial sector is the conduit through which financial deepening is manifested. The Department for International Development (DFID) (2004) defined the financial sector of an economy as the wholesale, retail, formal and informal institutions in an economy offering financial services to consumers, businesses and other financial institutions. It therefore broadly includes everything from banks, stock exchanges, insurers, credit unions, microfinance institutions and money holders.

Through its contributory features, the funded scheme has the inherent potential to boost savings. OECD (2005) has observed that institutional investors, in particular pension funds, mutual funds and insurance have enhanced their role as collectors of savings over the past few decades. It went on to conclude that this trend is likely to continue as retirement saving grows and the increased pension saving will augment the size of capital markets. The large pool of savings which constitutes pension funds must be channeled into portfolios for reasonable returns so that old-age liquidity of the retirees (former affiliates) and hence their old-age consumption (welfare) can be assured. This requires a high degree of financial intermediation in the financial sector. Such a come-together of the deficit and surplus spending units is likely to result in more deepening of the financial system (Goldsmith, 1969; Ghani, 1992; Greenwood and Jovanovic, 1990).

Ardic and Damar (2006) in their study of financial sector deepening and economic growth in Turkey captured financial depth as total bank deposits divided by Gross Domestic Product GDP. De Jesus Emidio (2007) utilized the ratio of bank deposits liabilities to nominal GDP to capture information on the extent of financial intermediation and the savings level in the economy of Mozambique. McDonal and Schumacher (2007) in their study of financial deepening in sub-Saharan Africa saw financial depth as the ratio of GDP of bank credit to the private sector.

Hasan et al (2007) in their study of institutional development, financial a deepening and economic growth in China, used two measures of financial deepening. One measure was based on banks alone; which was the ratio of total bank loans to GDP and the other was the non-bank sources; which was the ratio of equity and non-financial corporate debt (long term and

short term corporate bonds) issuance to GDP. In essence, issuance of equity and corporate bonds represents the activities of the capital markets.

Rousseau and Wachtel (2008) in their study of the impact if financial deepening on economic growth used three measures of financial development, namely; the ratios to GDP of liquid liabilities (M3), liquid liabilities less narrow money (M3 less M1) and credit allocated to the private sector. Lastly, Singh et al (2009) in their study of financial deepening in CFA France Zone captured financial depth as credit to the private sector in terms of GDP.

b) Pension System in Nigeria

Over the years, Nigeria is faced with a lot of challenges among which is pension and gratuity of her workers. Both the private and public sector workers have been faced with this challenge. The public sector workers have suffered a lot under the Defined Benefit Scheme (DBS) and their private sector counterparts have been pained owing to different pension plans by their respective employers.

Retirement benefit paid to retired employees prior to 2004 Reform Act was gratuity and pension. Adegbayi (2005) views gratuity as the payment of a lump sum to an ex-employee at the period of retirement while pension is the payment of monthly stipend to a person who has retired from active employment or business engagement. The payment is sustained by way of deductions from past entitlements or past earnings, which are saved to provide retirement benefits. Thus as a tax saving devise, savings toward pensions is quite encouraging. Equally, since pension saving is long term, it is also useful as a macro-economic tool for national development by enabling money to be in circulation for long-term investment.

As viewed by Ugwu (2006) in Amujiri (2009) there are four main classification of pension in Nigeria. These are retiring pension, compensatory pension, superannuating pension and compassionate allowance. It should also be noted that gratuity is a one-and-for-all lump sum of money paid to an employee on retirement. A retiring worker can be entitled to gratuity only or both gratuity and pension. It then means that a worker who is entitled to pension is also entitled to gratuity.

c) An Overview of Pension Systems in Nigeria

The history of Nigeria's pension system dates back to the year 1951 when the first pension scheme was inaugurated in the country. According to Balogun (2006), Nigeria's first ever legislative instrument on pension matters was the Pension Ordinance of 1951 which had a retroactive effect from 1st January, 1946. The law provided public servants with both pension and gratuity. The National Provident Fund (NPF) which was established in 1961, was the first legislation enacted to address pension matters of private organizations.

Pensions Decrees 102 and 103 (for the military) of 1979 were enacted with retroactive effect from April, 1974 (Ahmed, 2006).

The police and other Government Agencies' Pension Scheme were enacted under Pension Act No. 75 of 1987. This was followed by the Local Government Pension Edict which culminated into the establishment of the Local Government Staff Pension Board of 1987. In 1993, the National Social Insurance Trust Fund (NSITF) scheme was established by decree No. 73 of 1993 to replace the defunct NPF scheme with effect from 1st July, 1994 to cater for employees in the private sector of the economy against loss of employment income in old, invalidity or death.

Before 2004, most public organizations operated a Defined Benefit (Pay-As-You-Go) scheme and final entitlements were based on length of service and terminal emoluments. The defined benefit pension scheme in Nigeria was plagued by many problems among which were poor funding due to inadequate budgetary allocations [for instance shortage of budgetary release relative to benefits resulted into unprecedented and unsustainable outstanding pension deficit estimated at over ₦ 2 trillion before 2004 (Balogun, 2006)], weak, inefficient and non-transparent administration. There was no authenticated list/data base on pensioners and about 14 documents were required to file for pension claims. Restrictive and sharp practices in the investment and management of pension funds exacerbated the problems of pension liabilities and over 300 parastatals' schemes were bankrupt before the defined benefit scheme was finally jettisoned and replaced with the funded contributory benefit scheme in July, 2004.

The new pension scheme was established for all employees of the Federal Public service, Federal Capital Territory and the private sectors (including informal sector employees) in Nigeria. The major operators under the scheme are the National Pension Commission (PenCom), Pension Fund Administrators (PFAs), Closed Pension Fund Administrators (CPFAs) and Pension Fund Custodians (PFCs). Being a contributory scheme, employees are to contribute minimum of 7.5 percent of basic salary, housing and transport allowances and employers are to also contribute a matching fund. So the total minimum monthly contribution of a typical employee contributor under the scheme is 15 percent of basic salary, housing and transport allowances.

PenCom was established to regulate, supervise and ensure an effective administration of pension matters. In this regard, the commission is mandated under the Act to, inter alia, establish standard rules for the management of pension funds, approve, license and regulate PFAs, PFCs and CPFAs, manage national data bank on pension, impose sanctions or fines on

erring employers, PFAs, PFCs and CPFAs and ensure that payment and remittance of contributions are made and beneficiaries of retirement savings accounts (RSAs) are paid as and when due. In order to avoid the illiquidity and unsustainability that plagued the erstwhile defined benefit (PAYG) system, the Act and subject to enforcement by PenCom, specifically spelt out the investment of pension assets.

d) Objectives of the New Pension Scheme in Nigeria

Prior to the new pension scheme, Nigeria operated a Pay As You Go defined Benefit Scheme burdened with a lot of problem. Ahmad (2008) attributed the non-performance of the define benefit system of pension to under fund; unsustainable outstanding pension liabilities; weak and inefficient pension administration; demographic shifts and aging of the scheme; non-courage of workers in the private sector by any form of compulsory retirement benefit arrangement; and poor regulation of the hitherto scheme.

Due to the above deficiencies, there was need for proper and adequate reformation in order to properly cater and provide for retiree benefit. These identified loopholes necessitated the ushering in of the modern Contributory Pension Scheme (CPS). The CPS in the words of Ahmed (2006) is premised on the following:

- To ensure that every workers receives his retirement benefits as and when due.
- To empower the worker and assist workers to save in order to cater for their livelihood during old age.
- Stem the growth of pension liabilities.
- Establish uniform rules, regulation and standards for the administration of pension matters.
- Secure compliance and promote wider coverage.

e) Regulatory body and the operators under the new system

i. National Pension Commission

One of the reasons for the failure of DBS was lack of strict and effective regulations. Having identified this, the modern scheme established this body, PenCom to serve as the major regulatory organ to regulate all the pension system in the country.

The scheme made provides that National Pension Commission (PenCom) shall regulate, supervise and ensure the effective administration of pension matters in Nigeria. The PRA 2004 also ushered in the operators who are the Pension Fund Administrators (PFAs), Pension Fund Custodians (PFCs) and the Closed Pension Fund Administrators (CPFAs).

Section 21 of PRA 2004 states that the powers of the Commission shall be to formulate, direct and oversee the overall policy on pension matters in Nigeria; fix the terms and conditions of service including remuneration of the employees of the Commission; request or call for information from any employer or

pension administrator or custodian or any person or institution on matters relating to retirement benefit; charge and collect such fees, levies or penalties, as may be specified by the Commission; establish and acquire offices and other premises for the use of the Commission in such locations as it may deem necessary for the proper performance of its functions under this Act; establish standards, rules and regulations for the management of pension funds under this Act; investigate any pension fund administrator, custodian or other party involved in the management of pension funds; Impose administrative sanctions or fines on erring employers or pension fund administrators or custodians; Order the transfer of management or custody of all pension funds or assets being managed by a pension fund administrator or held by a custodian whose license has been revoked under this Act or subject to insolvency proceedings to another pension fund administration or custodian, as the case may be; And do such other things in its opinion are necessary to ensure the efficient performance of the functions of the Commission under this Act.

ii. *Pension Fund Administrators*

The new pension scheme requires pension funds to be privately managed by licensed Pension Fund Administrators. Pension Fund Administrators (PFAs) have been duly licensed to open Retirement Savings Accounts for employees, invest and manage the pension funds in a manner as the Commission may from time to time prescribe, maintain books of accounts on all transactions relating to the pension funds managed by it, provide regular information to the employees or beneficiaries and pay retirement benefits to employees in accordance with the provisions of the Pension Reform Act 2004.

Adegbayi (2005) has identified that the roles of PFAs are to open RSA for all employees registered by it with a Personal Identification Number (PIN); invest and manage the Fund and assets; Calculate annuities; and pay Retirement Benefits. It is glaring that the PFAs are the veritable operators that add value to the contributors' fund.

iii. *Pension Fund Custodians*

Pension Fund Custodians (PFCs) will be responsible for the warehousing of the pension fund assets. The PFAs shall not be allowed to hold the pension fund assets. The employer sends the contributions directly to the Custodian, who notifies the PFA of the receipt of the contribution and the PFA subsequently credits the retirement savings account of the employee.

Specifically, the primary functions of PFCs are: Receive and Hold the Fund upon trust for Contributors and Beneficiaries; Settle investment transactions on behalf of the PFA; provide independent reports to the Pension Commission on Fund assets and Undertake

statistical analysis on the investment and returns on behalf of the Pension Commission and the PFA.

As a matter of fact, the functions of the PFAs and the PFCs interlock and act as a grid against financial impropriety. Thus, even though the PFA opens the account, it does not have access to the money except for purposes of investment, which asset representation must still be kept with the custodian, who settles payment and other transactions made on particular investment undertaking. The money is also not controlled by the PFC, who must act upon the instructions of the PFA and cannot treat funds with it as mere cash savings. Since both parties assume joint trust positions, an incidence of financial imprudence is reduced but cannot be totally ruled out.

iv. *The Closed Pension Fund Administrators*

The Closed Pension Fund Administrators (CPFAs) are specifically established by companies with strong financial standing to manage their pension funds. There are about seven CPFAs owned mostly by multinational companies to enable them administer their pension funds under the guide and direction of PenCom.

f) *Opportunities created by the contributory pension scheme*

A lot of opportunities are created in the modern CPS. The scheme has boasted the capital and money markets and this has brought a tremendous growth to the economy. As it stands, all PFAs have their funds invested in the capital market through equities and bonds. Also the banks and other money market operators have had their own share through fixed deposits. The PFAs and PFCs that were the offshoot of the new scheme have created employment opportunities and savings for employees among others. Oshiomole (2007) capped up the available and inherent potentials the Nigeria and Nigerians stand to gain with advent of the CPS. In his opinion CPS has created opportunities ranging from individual retirement savings account which enhances fund accumulation, mobility of labour without any effect on the RSA fund, contributors' rights to change PFA as the occasion demands, access to retirement benefits as at when due, minimum pension guarantee to accumulation of long-term funds which has contributed to the growth in the capital market.

The new pension scheme has laid to rest Ghost Pension Syndrome (Amujiri, 2009:148). Also, Agbese (2008) in Amujiri (2009) opined that the introduction of the new pension scheme in Nigeria marked a turning point in Nigeria economy because it made the incidence of Ghost Pensioner to disappear completely from payroll of pensioners nationwide.

Since individuals own the contributions, the pensioner is no longer at the mercy of government or employer and is assured of regular payment of

retirement benefits. The employee has up to date information on his retirement savings account. The scheme imposes fiscal discipline on the nation and a solid foundation for economic development. There is an expansion of convertible funds, creation of a huge pools of long term funds and enhances accountability.

The scheme introduces clear legal and administrative sanctions and there is a separation of investment, administration and custody of assets.

Transparency is also assured by the requirement for published rate of returns, regular statement of contributions and earnings and audited account.

g) The problems of contributory pension scheme

- i. Remittance of the benefits to the Retirements Savings Account (RSA) by firms, employers and employees may be difficult.
- ii. How genuine are our pension fund administrators and custodians that have licensed; were the licenses given to those competent and qualified?
- iii. What are the legal frameworks put in place by government such that in spite of political changes, the scheme is sustained by subsequent government?
- iv. How do we ensure effective implementation of penalties in the act of non-compliers regardless of their status and origin?
- v. How will government and national pension commission monitor, supervise, and enforce the provisions of the Pension Reform Act 2004?
- vi. What happen if PFAs or PFCs default or went into liquidation?

h) Theoretical Framework

The underpinning theory guiding this study is the deferred wage theory (Malaski, Firend and Capelli, 1981-82 and March 1980) which views the pension plan as a method to defer some compensation until an employee retires. The employer promises to provide a pension payment in exchange for current services. The deferral of wages often results in individual tax savings. The advantages to the employer of providing a pension plan are less obvious. Under the deferred wage theory, firms offer pension plans because of economies scale in administrative, portfolio management and other costs, e.g. Lester (1967), Fosu (1983) and Freeman (1981). The employer receives cash flow benefits to the extent that the present value of deferred wages exceeds the required funding (especially as now required by ERISA).

The deferred wage theory generally incorporates a long-term or lifetime implicit labor contract between the employer and employee that has various implications for the employer (Logue, 1979). Salop and Salop (1976) and Blinder (1982) suggest that the delayed vesting of pension plans may decrease employee turnover costs. Becker (1964) suggest that

firms have an incentive to expand training costs as a result of delayed vesting, since it causes "average" employees to work longer for the company, resulting in a greater payback of these training costs.

III. RESEARCH METHODOLOGY

a) Introduction

The study examines the usefulness of Contributory Pension Scheme to Nigerian Economic Development. This chapter would therefore, show the research design, area of the study, population size of eh study, sample size and sampling technique, validity and reliability of the research instruments, source of data collection and method of data analysis.

b) Research Design

Research design is the guideline which directs the researcher towards solving the research problem. In the course of this study the researcher will adopt survey method of data collection. That means, data will be gathered from both primary and secondary data using questionnaire method of data collection.

c) Area of the study

Legacy Pension Managers is situated at No. 39, Adetokunbo Ademola crescent, Wuse II, Abuja, the Federal Capital Territory (FTC). Abuja is located in the center of Nigeria and has land area of 5000 square km. It is bounded on the north by Kaduna State, on the west by Niger State, on the east and south-east by Nasarsawa State and on the south-west by Kogi State. It falls within latitude 745° and 739°. It shares savannah grass with the North. And overall effect of this is that Abuja has rich soil for Agriculture and enjoys equitable climate that is neither hot nor too cold all year round.

d) Population size of the study

Population refers to the entire members or elements in which the researcher is interested. Then population of this study covers the 5000 customers and 50 staff of Legacy Pension Manager.

e) Sample size and sampling technique

The researcher further used judgmental sampling to select 30 staffs and 70 customers from Legacy Pension Managers.

f) Source of data collection

The researcher used both primary and secondary methods of data collection in obtaining data for the work.

i. Primary Data

According to Orji (2009) primary data refers to data that contains direct accounts that are obtainable observations, direct participation and questionnaires. The primary data used for this research work is personal interview and questionnaires.

ii. Secondary Data

The secondary sources of information used are journals, magazines, seminar-papers and from Federal Bureau for Statistics.

g) Method of data analysis

The analytical tools used in analyzing the data collected for the study is the descriptive statistics. In the same vein, the study used Pearsons Product Movement correlation coefficient and the student t-test to test the formula hypothesis.

The product movement correlation coefficient in testing the hypothesis is to determine the extent of correlation between the coefficient of correlation, while the t-test is used for ascertainment of the significance that exists between the variables.

IV. DATA PRESENTATION AND ANALYSIS

a) Data Presentation

Based on the research question and hypothesis that guide this study, the data collected are presented, analyzed and discussed in this chapter. The researcher had earlier defined a sample size of (30) staffs and (70) RSA holders for the study. Questionnaires were prepared and administered based on gender, age and education.

In this section, the researcher presented and analyzed the personal data of the respondents. This analysis is based on percentages as shown below:

Table 1 : Sex Distribution of the Respondents

Responses	Frequency	Percentages (%)
Male	20	67
Female	10	33
Total	30	100

Source: Field Survey, 2013.

The above table revealed that 20 respondents representing 67% were male while 10 respondents representing 33% were female.

Table 2 : Age Distribution of the Respondents

Responses	Frequency	Percentages (%)
21-30years	5	17
31-45years	15	50
46-60years	10	33
Total	30	100

Source: Field Survey, 2013.

The above table shows that 5 respondents representing 17% fall within age bracket of 21-30years while 15 respondents representing 50% were within 31-45years and 46-60years were 10 representing 33%.

Table 3 : Educational Qualification

Responses	Frequency	Percentage (%)
OND/NCE	10	33
HND/DEGREE	15	50
MSC AND ABOVE	5	17
Total	30	100

Source: Field Survey, 2013.

The above table revealed that 10 respondents representing 33% had educational qualification of OND/NCE while 15% respondents representing 50% were HND/DEGREE holder and 5 respondents representing 17% had MSC and above.

b) Data Analysis

In this section, the researcher presented and analyzed all data collected in the course of the study. Here, the researcher used frequency table and percentage to present, interpret and analyzed the data.

Question Four: The Operational Risk Affects Pension Fund Management?

Table 4

Responses	Frequency	Percentage (%)
Strongly Agreed	13	43
Agreed	11	37
Disagreed	4	13
Strongly Disagreed	2	7
Total	30	100

Source: Field Survey, 2013.

The above table indicates that 13 respondents representing 43% strongly agreed to the question, the operational risk effect on pension fund management, 11 respondents representing 37% agreed, 4 respondents representing 13% disagreed while 2 respondents representing 7% strongly disagreed and. This implies that there is operational risk effect on pension fund management.

Question Five: Inefficient Management of Investment Risk?

Table 5

Responses	Frequency	Percentage (%)
Strongly agreed	12	40
Agreed	10	33
Strongly agreed	3	10
Disagreed	5	17
Total	30	100

Source: Field Survey, 2013.

The table above shows that 12 respondents representing 40% strongly agreed that there is inefficient management of investment risk, 10 respondents representing 33 % agreed, 3 respondents representing 10% strongly disagreed and 5 respondents representing

17% disagreed. It therefore implies that there is inefficient management of investment risk.

Question Six: The Market Risk Reduces the Return on Pension Fund Investment?

Table 6

Responses	Frequency	Percentage (%)
Strongly agreed	8	27
Agreed	12	40
Strongly disagreed	4	13
Disagreed	6	20
Total	30	100

Source: Field Survey, 2013.

The table above shows that 8 respondents representing 27% strongly agreed that the market risk reduces the return on pension management fund investment, 12 respondents representing 40% agreed, 4 respondents representing 13% strongly disagreed and 6 respondents representing 20% disagreed. It therefore implies that the market risk reduces the return on pension fund investment.

Question Seven: The establishment of PFAs and PFCs Lead to Job Opportunity Creation?

Table 7

Responses	Frequency	Percentages (%)
Strongly Agreed	8	27
Agreed	12	40
Disagreed	4	13
Strongly Disagreed	6	20
Total	30	100

Source: Field Survey, 2012.

The table above shows that 8 respondents representing 27% strongly agreed to the statement that the establishment of PFAs and PFCs lead to job opportunity creation, 12 respondents representing 40% agreed, while 4 respondents representing 13% disagreed and 6 respondents representing 20% strongly disagreed. This implies that PFAs and PFCs create job opportunities.

Question Eight: There Was Prompt Access to Financial Statement And Status Report?

Table 8

Responses	Frequency	Percentages (%)
Strongly Agreed	10	14
Agreed	15	21
Disagreed	20	36
Strongly Disagreed	25	29
Total	70	100

Source: Field Survey, 2012.

The above table indicates 10 respondents (14%) strongly agreed to the statement that there was prompt access to financial statement and status report,

15 respondents (21%) agreed, 20 respondents (36%) disagreed, while 25 respondents representing (29%) strongly disagreed. This implies that there is no prompt access to financial statement and status report by the RSA holders.

Question Nine: The CPS Provides Resources for Investment In The Money And Capital Markets?

Table 9

Responses	Frequency	Percentage (%)
Strongly Agreed	13	43
Agreed	12	40
Strongly Disagreed	3	10
Disagreed	2	7
Total	30	100

Source: Field Survey, 2013.

From the table above, 13 respondents representing 43% of the strongly agreed to the statement that the CPS provides resources for investment in the money and capital markets, 12 respondents representing 40% agreed, 3 respondents representing 10% strongly disagreed and 2 respondents representing 7% disagreed. It therefore means that, from the responses in the table, the CPS provides resources for investment in the money and capital markets.

Question Ten: The Payment of Tax to Government through Personal Income Tax of the Employees of the Various PFAs and PFCs?

Table 10

Responses	Frequency	Percentage (%)
Strongly Agreed	10	33
Agreed	12	40
Strongly Disagreed	2	7
Disagreed	6	20
Total	30	100

Source: Field Survey, 2013.

The table shows that 10 respondents representing 33% strongly agreed to the employees of various PFAs and PFCs pay tax to government through personal income tax, 12 respondents representing 40% agreed, 2 respondents representing 7% strongly disagreed while 6 respondents representing 20% disagreed. It is therefore evident from the responses that the employees of the various PFAs and PFCs pay tax to government through personal income tax.

Question Eleven: The Pension Reform Act of 2004 Help In Reducing Problem of Defined Scheme?

Table 11

Responses	Frequency	Percentage (%)
Strongly Agreed	20	29
Agreed	25	36
Strongly Disagreed	10	14
Disagreed	15	21
Total	70	100

Source: Field Survey, 2013.

Table 10 above shows that 20 respondents representing 29% strongly agreed that Pension Reform Act of 2004 helps in reducing the problem of defined scheme, 25 respondents representing 36% agreed, 10 respondents representing 14% strongly disagreed and 15 respondents representing 21% disagreed. It therefore means that the Pension Reform Act 2004 helps in reducing the problem of the defined scheme.

Question Twelve: The CPS Enhances Adequate And Prompt Payment To Retirees?

Table 12

Responses	Frequency	Percentage (%)
Strongly Agreed	20	29
Agreed	28	40
Strongly Disagreed	10	14
Disagreed	12	17
Total	70	100

Source: Field Survey, 2012.

The Contributory Pension Scheme (CPS) and Gross Domestic Product (GDP).

Table 13

Years	CPS (₦ Trillion)	GDP (₦ Trillion)	Percentage of CPS in GDP
2005	0.164	11.674	1.4
2006	0.189	14.735	1.3
2007	0.243	18.710	1.3
2008	0.284	20.874	1.4
2009	0.384	25.425	1.5
2010	0.412	25.490	1.6

Source: Contributory Pension Scheme (CPS) and Federal Bureau for Statistics (FBS), 2012.

Table 7 shows that ₦164 billion representing 1.4% of the Nigeria GDP of ₦11.674 trillion was generated as CPS in 2005, ₦189 billion representing 1.3% of GDP of ₦14.735 trillion as CPS in 2006, ₦243 billion representing 1.3% of GDP of ₦18.710 trillion as CPS in 2007, ₦284 billion representing 1.4% of GDP of ₦20.874 trillion was generated as CPS in 2008, ₦384 billion representing 1.5% of GDP of ₦25.425 trillion as CPS in 2009 while ₦412 billion was realized by the

Table 11 reveals that 20 respondents representing 29% strongly agreed to the statement that CPS enhances adequate and prompt payment to retirees, 28 respondents representing 40% agreed, 10 respondents representing 14% strongly disagreed and 12 respondents representing 17% disagreed. Therefore, from the responses in the table it is evident that the CPS enhances adequate and prompt payment to retirees.

The data presented, analyzed and interpreted as shown below is composed mainly of secondary data obtained from the records of the Contributory Pension fund and the Federal Bureau for Statistics.

Contributory Pension Scheme in 2010.

The data in table 7 was used to test H_0 : Contributory Pension Scheme has no significant and Positive effect on Gross Domestic Product (GDP).

c) Test of hypothesis

H_0 : Contributory Pension Scheme has no significant and Positive effect on Gross Domestic Product (GDP).

Table 14 : Contingency Table

S/N	X(CPS) (₦trillion)	Y(GDP) (₦ trillion)	X^2 (₦ trillion)	Y^2 (₦ trillion)	XY (₦ trillion)
1	0.164	11.674	0.027	136.282	1.915
2	0.189	14.735	0.036	217.297	2.7785
3	0.243	18.710	0.059	350.064	4.547
4	0.284	20.874	0.081	435.724	5.928
5	0.384	25.425	0.147	646.431	9.763
6	0.412	25.490	0.170	649.740	10.502
	$\Sigma x = 1.676$	$\Sigma y = 116.908$	$\Sigma x^2 = 0.5$	$\Sigma y^2 = 2435.538$	$\Sigma xy = 35.44$

Source: Field Survey, 2013.

By applying the formula for Pearsons Product correlation coefficient;

$$r = \frac{\Sigma xy - \Sigma x \Sigma y}{\sqrt{[n \Sigma x^2 - (\Sigma x)^2] [n \Sigma y^2 - (\Sigma y)^2]}}$$

$$r = \frac{6(35.44) - 1.676 \times 116.908}{\sqrt{[6(0.52) - (1.676)^2] [6(2435.538) - (116.908)^2]}}$$

$$r = \frac{212.64 - 195.94}{\sqrt{(3.12 - 2.81) (14613.23 - 13667.48)}}$$

$$r = \frac{16.7}{\sqrt{0.31 \times 945.75}}$$

$$r = \frac{16.7}{\sqrt{293.18}}$$

$$r = \frac{16.7}{17.12}$$

$$r = 0.98$$

This shows a very high positive correlation between Contributory Pension Scheme (CPS) and the Gross Domestic Product GDP of Nigeria economy. This reflects a high positive influence which Contributory Pension Scheme has on wealth creation in Nigeria.

However, to test the significance of this positive correlation coefficient, the researcher converted the value of "r" to "t" score with the following formula provided by Healey (1993); $t = r \sqrt{\frac{n-2}{1-r^2}}$

Where; t = the needed significance of correlation coefficient

n = the number of sample population

r = the already determined correlation coefficient

n-2 = the degree of freedom

r² = the coefficient of determination

$$t = 0.98 \sqrt{\frac{6-2}{1-0.98^2}}$$

$$t = 0.98 \sqrt{\frac{4}{0.04}}$$

$$t = 0.98 \sqrt{100}$$

$$t = 0.98 \times 10$$

$$t = 9.8$$

The critical table value is 2.776 at 5% alpha level of significance and degree of freedom is 4.

i. *Decision Rule*

Since the t-calculated value of 9.8 is greater than the t-table value of 2.776, the null hypothesis (H₀) therefore is rejected and alternate hypothesis (H₁) should be accepted. Hence Contributory Pension

Scheme CPS has significant effect on Gross Domestic Product (GDP).

ii. *Test of Hypothesis Two*

H₀: The Risk Prevalent in Pension Fund Investment has no Significant Effect on Pension Management.

The researcher used Analysis of Variance table below:

Anova Table

Source	SS	Df	MS	F-ratio	Remark
Between	SS _B	t-1	SS _B /df _B	MS _B /MS _W	Accept or reject
Within	SS _W	N-t	SS _W /df _W		
Total	SS _T	N-1			

Source: Adefila (2008).

In order to accept or reject the null hypothesis the researcher used questions 4, 5, and 6 to test hypothesis two.

The risk prevalent in the pension fund investment has no significant effect on pension management.

Variable	Questions 4	Question 5	Question 6	Total
Strongly agreed	13	12	8	33
Agreed	11	10	12	33
Strongly disagree	2	3	4	9
Disagreed	4	5	6	15
Total	30	30	30	90

Source: Field Survey, 2012.

$$\text{Sum of square between (SS}_B) = \frac{(\sum x^2 + \dots + x^2)}{n} - \frac{Q^2}{N}$$

Where:

n = Number of column in a group = 3

N = Total number of active cells = 12

Q = Grand total and all the cells = 90

$$\begin{aligned} SS_B &= \frac{33^2}{3} + \frac{33^2}{3} + \frac{9^2}{3} + \frac{15^2}{3} - \frac{90^2}{12} \\ &= \frac{1089}{3} + \frac{1089}{3} + \frac{81}{3} + \frac{225}{3} - \frac{8100}{12} \\ &= 363 + 363 + 27 + 75 - 675 \\ &= 828 - 675 \\ &= 153 \end{aligned}$$

$$\begin{aligned} \text{Sum of square total (SS}_T) &= \frac{(\sum x^2 + \dots + x^2)}{n} - \frac{Q^2}{N} \\ &= 13^2 + 12^2 + 8^2 + 11^2 + 10^2 + 12^2 + 2^2 + 3^2 + 4^2 + 4^2 + 5^2 + 6^2 - \frac{90^2}{12} \\ &= 169 + 144 + 64 + 121 + 100 + 144 + 4 + 9 + 16 + 16 + 25 + 36 - 675 \\ &= 848 - 675 \\ &= 173 \end{aligned}$$

$$\begin{aligned} \text{Sum of square within (SS}_W) &= SS_T - SS_B \\ &= 173 - 153 \\ &= 20 \end{aligned}$$

$$\text{Degree of freedom (df}_B) = t-1$$

$$\begin{aligned} T &= \text{total number of group available} = 4 \\ &= 4-1 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{Degree of freedom within (df}_W) &= N-t \\ &= 12-4 \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{Degree of freedom total (df}_t) &= N-1 \\ &= 12-1 \\ &= 11 \end{aligned}$$

$$\begin{aligned} \text{Means square between (MS}_B) &= \frac{SS_B}{df_B} \\ &= \frac{153}{3} \\ &= 51 \end{aligned}$$

$$\begin{aligned} \text{Mean square within (MS}_W) &= \frac{SS_W}{df_W} \\ &= \frac{20}{8} \\ &= 2.5 \end{aligned}$$

$$F\text{-ratio} = MS_B / MS_W = 51 / 2.5 = 20.40$$

Anova Summary Table

Source	SS	DF	MS	F-ratio
Between	153	3	51	20.40
Within	20	8	2.5	
Total	173	11		

Critical value at of 5% level of significance with degree of freedom 3 to 8 is 4.07.

iii. Decision Rule

Since the calculated value of 20.40 is greater than the critical value of 4.07, the alternate hypothesis (H_1) is accepted and the null hypothesis (H_0) is rejected. Therefore, the researcher concludes that risk prevalent in pension fund has significant effect on pension management.

V. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

a) *Summary of Findings*

The researcher discovered from his findings that the new contributory pension scheme which was ushered in by the Reform Act 2004, has helped in reducing the problem associated with the defined benefit scheme. The researcher discovered the following findings:

- i. Adequate investment and management of the pool of fund contributed by employees and employers has immensely contributed to development of the economy.
- ii. The risk prevalent in pension fund investment has significant effect on pension management.
- iii. The RSA fund financial statement and RSA status report are not received promptly.
- iv. Creating job or employment to the masses thereby reducing unemployment and alleviating poverty.
- v. Provide resources for investment in the money and capital market.
- vi. Payment of tax to government through personal income tax of the employees of the various PFA and PFCs.
- vii. Enhances adequate and prompt payment of pension to retirees.

b) *Conclusion*

The study has shown that effective and sound investment and management of pension fund has a tremendous impact the economy as a whole. There will be huge investment of fund in the capital and money markets, creation of employment opportunities as well as increased tax revenue to the government.

The analyses have shown that among all the investment outlets, hybrid fund and equity have proven to be the most volatile. This volatility is a response to economic and political risks that the country and of course the global economies have not fully recovered from the global economic crises. Also, the country's stepping into the electoral year has a great undertone on Nigerian capital market. The regression also reveals that government bond, money market instrument and corporate bond have an appreciable impact on the net asset value and/or the unit prices. The changes in un-invested cash are as a result of receipt of bond and money market instrument interests and ordinary share dividends as well as temporary liquidation/termination of MMIs etc.

The responses from the respondents show that investment decision making is based on informed judgments and fund accounting are both handled by professionals. However, the risk department is viewed to concentrate more attention on regulatory compliance than pre-investment risk appraisal. The survey also

disclosed that some PFAs do not submit their daily, weekly, monthly and annual Pension Regulatory Reports (PENRR) as at when due. This has led to payment of fines by defaulting PFAs to PENCOM. Responses by respondents have also shown that most of RSA holders do not receive their monthly RSA status report. This status report is necessary because it is the major communication that enables the RSA holders to assess the monthly contributions.

Coupled with the risk management, the contributory pension has served in effective and efficient capacity in boosting the Gross Domestic Product (GDP) and very convenient to retirees compared to the previous defined benefit scheme.

c) *Recommendations*

Having reviewed the Contributory Pension Scheme (CPS), the researcher hereby recommends thus:

- i. There should be more emphasis on the management of pension assets in the capital market as well as government bond, real estate, investment trust to boost Gross Domestic Product (GDP) of the country (Nigeria).
- ii. Risk assessment should be improved upon in the area of pre-investment risk appraisal. This will help to guide against economic and political risks that are prevalent in an emerging economy of ours.
- iii. PenCom should ensure effective monitoring, supervision and enforcement of the provision of the PRA 2004, which are the inevitable ingredients in the Contributory Pension Scheme towards Gross Domestic Product (GDP).
- iv. There should be prompt reconciliation between PFAs, PFCs and PENCOM and statements of accounts should be given to contributors regularly. This will bring transparency and accountability to the system.
- v. PFAs should send RSA reports via mail and SMS alert to RSA holders regularly to enable them monitor and document the pension contribution. Also there should be a good network of accessibility to members of PFAs whereby discrepancies between their payment and the status reports can be easily tracked and corrected no matter the distance under a limited reasonable time.
- vi. The Pension Regulatory Reports (PENRRs) should be promptly submitted to the regulatory authority as at when due. However whenever there is default and non-compliance, there should be a tough penalty on PFAs and PFCs to serve as a deterrent to others.
- vii. Computed charges by PFAs should be strictly monitored by PenCom to avoid overcharge. This is because it has a negative impact on the RSA contribution.
- viii. Professionals should be employed by PFAs to bring competence and professionalism to the investment of funds and risks and return thereon.

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Does Islamic Banking System Contributes to Economy Development

By M. Saleh Sarwer, Prof. Dr. Muhammad Ramzan & Waqar Ahmad

Superior University, Pakistan

Abstract - The purpose of this paper is to give the true meaning of development from an Islamic perspective. This paper examines the dynamic interactions between Islamic banking and economic growth in Pakistan, to see if the financial system affects and growth, transformation and growth of the financial system. Usually, in most Muslim countries, and in some non-Muslim countries, Islamic banking and works as a part of the banking system and the Islamic Republic of Pakistan is one of them. The aim of this paper was to consider the opinions of the interviewees regarding the role of Islamic banking in Pakistan in economic development. Six interviewees were asked about the types of effects of Islamic banking on economic development in the Pakistan. They were asked about 8 different types of effects. Most respondents believe that Islamic banking in Pakistan had positive impact on economic development. Some scholars around the world consider the use of Islamic banking more convenient for economic development. This result also indicates that improving the infrastructure of Islamic finance in Pakistan could benefit economic development. Islamic banks can play an important role in Pakistan today.

Keywords : *islamic banking, economic development, Pakistan.*

GJMBR Classification : *JEL Code: 150202*



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Does Islamic Banking System Contributes to Economy Development

M. Saleh Sarwer ^α, Prof. Dr. Muhammad Ramzan ^σ & Waqar Ahmad ^ρ

Abstract - The purpose of this paper is to give the true meaning of development from an Islamic perspective. This paper examines the dynamic interactions between Islamic banking and economic growth in Pakistan, to see if the financial system affects and growth, transformation and growth of the financial system. Usually, in most Muslim countries, and in some non-Muslim countries, Islamic banking and works as a part of the banking system and the Islamic Republic of Pakistan is one of them. The aim of this paper was to consider the opinions of the interviewees regarding the role of Islamic banking in Pakistan in economic development. Six interviewees were asked about the types of effects of Islamic banking on economic development in the Pakistan. They were asked about 8 different types of effects. Most respondents believe that Islamic banking in Pakistan had positive impact on economic development. Some scholars around the world consider the use of Islamic banking more convenient for economic development. This result also indicates that improving the infrastructure of Islamic finance in Pakistan could benefit economic development. Islamic banks can play an important role in Pakistan today.

Keywords : *islamic banking, economic development, Pakistan.*

I. INTRODUCTION

The relationship between economic growth in the broad sense, like increasing the size of financial services of banks and other financial intermediaries and financial transactions in capital markets and economic growth has long been a major developing economy. Islamic Banking has established itself as an emerging alternative to interest-based banks, and has grown rapidly in the last two decades, both in Islamic countries and non-Muslims. Islamic banks have recorded high growth in size over 60 countries around the world, and bankers predict that the Islamic bank can control more than 50% of deposits in Islamic countries over the next decade (Ahmad, 2004). Today, the financial and banking system, especially in activities related to economic development, all countries can play an important role in economic activity. Indeed, an economic system and has a direct relationship between the level of overall growth and development. While a necessary condition for economic growth, investment is an important factor for economic development. Thus, investors can play an

important role in financing economic development, giving credit to an economic system, particularly in banking. Generally, income and wealth distribution and a more Islamic and more equitable participation in the economy as a contribution to a larger bank, but the reason comes from the Islamic confirmed that, despite their claims to be there for your interest in the sequence. Since there are two main groups in any society with money to spare, but cannot or do not want to invest and produce, and can act as producers and even writers, but not enough money to invest, the primary responsibility of banks to raise money for the remaining depositors and deposits (mobilization) and provide the producers and creators.

There are about 50 years first Islamic bank was founded in 1950, in Pakistan is not to pay interest on the loan, only a small fixed fee to cover the operating costs of the bank (Wilson, 1983). The practices and activities of Islamic banks reflect the environment in which they are based. There are strong retail operations in Iran and Saudi Arabia. In the secular societies of northern Africa, Islamic banks compete on the quality of products rather than on religious grounds. In Kuwait, financing has focused on the petroleum sector and real estate investment and in the United Arab Emirates the emphasis is on trade and finance. Introduced in the modern banking system in Muslim countries, when it was politically and economically powerful 19th century was the first modern Islamic bank in Egypt to try to meet without the image of Islamic design, because they are afraid to be regarded as an expression of Islamic fundamentalism that was anathema Policy regime. After the Islamic Revolution in Iran (1979) concurrently with the steps being taken for the reformation and structural improvement of the banking system, studies were undertaken for the Islamization of the banks. The Islamic financial system in Malaysia has evolved as a viable and competitive component on the overall financial system as a driver of economic growth and development. (BNM Annual Report, 2003) In term of economic growth, Malaysia has a remarkable record of consistently high growth in the past three decades. The growth of GDP in real terms accelerated to 5.3 percent in 2005. As a country slightly shifted toward industrial country, industrial sectors and services contributed 80 percents to total of GDP of Malaysia. With total population 26.7 million, Malaysia maintains its

Author ^α : Superior University, Pakistan. Email : m.saleh084@hotmail

per capita GDP above US\$ 3,000 since 1995. A sophisticated Islamic financial system and the enormous economic growth at the same time to withdraw our attention to examining whether the Islamic banking system that is currently used in Malaysia really contributes to long-term economic growth in Malaysia. For this, we will see the dynamic interactions between finance and growth through the application of models in which the financial system affects economic growth and economic growth arrests the financial system. When it is more developed in the financial sector, and that more funds can be used in the production, which was formed more than physical capital that can contribute positively to economic growth.

II. OVERVIEW OF ISLAMIC BANKING CONCEPTS

Islamic banking is a financial system whose main objective is to achieve the teachings of the Koran. Islamic law reflects the commandments of God, and organizes all aspects of Muslim life, and therefore directly involved in Islamic finance, spirituality and social justice. Based on the theory of Islamic banking on the concept that is strictly forbidden in the interest of Islam and the teachings of Islam which provide the necessary guidance is based on the work of the banks. The fundamental principle that has guided my work in Islamic banking is that, despite the ban on trade in interest in Islam, and encourages and profit. Traditional bank uses the interest rate mechanism for the implementation of its financial operations. It was developed by Muslim scholar's completely different model of banking services that do not use, but the interest is based on change in the distribution of income for purposes of financial intermediation. The basic principle of Islamic law is that exploitation contracts or contracts of unfair risk or speculation are not permissible. Under Islamic banking, and all partners involved in financial transactions involved in the risk and the gain or loss on the project and not get a return on a pre-determined. This direct relationship between investment and profit is the main difference between Islamic and conventional banks, which has a main objective to maximize shareholder wealth. (Dar and Presley, 2000) "Various pillars exist that allow Islamic banks to deliver competitive performance and promote socially and ethically responsible business practices. Of these, the three main pillars that contribute to improvements in quality of life throughout society include Shari'a supervision, screening and community based investment". Sharia supervision of a qualified advisory board of Islamic law is an essential element of the structure of Islamic finance. It is assumed by the Board to be independent and monitors investment strategies,

implementation, monitoring and reporting. The second main pillar, known as exploration and includes activities, including or excluding the values of investment portfolios traded or mutual funds based on religious and moral conditions of Islamic law. Some companies are therefore not excluded in accordance with Islamic law and the actions of these companies.

Investment in community programs to provide capital to those who have no access to it through traditional channels. These investments allow the people of the community to improve living standards and help them develop small businesses and create jobs. (Zaher and Hassan, 2001).

III. LITERATURE REVIEW

Instead of discussing the relationship between systems (Banking) Financial and economic growth, economists often discuss the relationship between financial development and economic growth, but each of the same reality. (Schumpeter, 1912) argued the importance of the banking system in the level and growth rate of national income in promoting economic development through the identification and financing of productive investments. Islamic banks working hard to overcome the shortcomings and difficulties in helping the economy to move to a higher stage of development of self-sufficiency, resulting in a positive impact on socio-economic harmony due to the equal distribution of income (Young, 1986, and Luintel Demetriades, 1996). (Ahmed Ansari, 1998) and (Rousseau and Wachtel, 1998, Shaw 2000, Erester et al. 2001) and (PHASE and ABMA 2003) argue that the expansion in the financial system can have a positive impact on economic growth. (Robinson, 1952) believed that economic growth leads to financial sector development. (Christ and Christ, 1996) supports the hypothesis that the demand after the cause of economic growth in the financial sectors for development. It cannot be the financial system and therefore support the leading sectors in the growth process. Here is an act of expansion in the financial system as a result of real economic growth, or the next request. On the other hand, studies by (Odedokun, 1992) and (Luintel and Khan, 1999) prefer two way causality between finance and growth. The Islamic financial system, and experimental studies to date have been conducted to examine the efficiency and superiority and stability in Islamic banks as compared to conventional banks to achieve some milestones cash the ultimate goal that focuses towards the sustainability of real economic growth, reducing inflation and reducing unemployment. (Dara, 1988) found that the banking system, without the benefits of a more superior to the goal of cash found in the interim (Yousefi et al, 1997), and (Joseph and Wilson, 2005) there is no evidence superiority and stability of the system of interest free banking system compared to the Bank

interest menu. Integrated depth and according to (Abdoulie 1991, the Cave, Ahmad and actually Hammoud, 1998, my friend, in 2002, Iqbal 1997) and to maximize profitability is not the only concern of the institutes of the Islamic banking and principles based on Islamic banks in the moral and ethical values. They also claim that Islamic banks do not rely on the assurances of concrete and lead to better income distribution, allowing access to finance for the poorest classes of society, and lead to greater benefits for social justice and long-term growth. And directly affected by the nature of Islamic banking operations through the success or failure of customer projects as a result of the income distribution (Abdoulie, 1991). The relationship is based on a partnership, with cash being entrusted to banker for investment, and returns shared between depositors and bankers. Losses are carried by fund owners. This sharing principle is very different to traditional banking practices. It introduces the concept of sharing to financing and creates a performance incentive within the mind of bankers that relates deposits to their performance in the use of funds. Islamic bankers encourage people to invest as investment depositors receive a share in the bank's profits". Investors are motivated by the human desire toward ownership, high rewards and the satisfaction of being part of a successful project (Martan et al, 1984). According to (Iqba, 1997), "the economic development of Islamic countries can be greatly enhanced by the Islamic financial system due to the mobilization of savings that are being kept away from interest based banks and the development of the capital markets. This motivation to invest in Islamic banks may also stem from the fact that research shows that the share in the bank's profits may at times be higher than the fixed rate of interest given by conventional banks. According to (Iqbal, 1997), one can expect that the Islamic financial system is best for the elimination of debt financing, and improve the efficiency of allocation. In the Islamic banking system is experienced and stability in times of crisis, the share of investment depositors automatically at risk because of participation in the profits and losses, and this means that individual banks and the whole banking system is less likely to break (Zaher and Hassan, 2001). Focus on Islamic finance in the profitability and rate of return on investment as a result of an exchange of shares and benefits has the ability to channel financial resources to more productive investments, and therefore increases the effectiveness of the funding process and real sectors (Kahf et al, 1998). (Qureshi, 1984 and Nagvi, 1981 and 1982) "Claim that Islamic bankers are increasingly exposed to risk due to equity-based financing, however Islamic scholars believe that the elimination of interest increases stability. In financial theory a linear relationship exists between risk and

return, meaning that low risk is associated with low return and high risk brings about high return". (Chapra, 1992), the risk is a key element in making the investment, investors in the distribution of risks associated with those who are carrying out investment activities. Islamic finance offers depositors with some impact on investment decisions and gives banks and financial institutions to participate in the decision making process. This allows both for risk and decision making over a much larger number, and a variety of people, enabling greater participation in economic activities (Ziauddin, 1994). A further study by (Samad and Hassan, 1997) that compares an Islamic bank with a group of conventional banks shows that Islamic banks are less risky than conventional banks. Sarker, 1997), however, found that the risk involved in profit sharing is very high, but states that many external factors and obstacles interfered with the proper implementation of the Islamic banking system. However, not all agree with the importance of the financial system in the growth process. (Lucas, 1988) believes that economists badly over-stress the role of financial factors in economic growth. (Robinson, 1952) According to this view economic growth is the reason for financial development. It creates demands for particular types of financial arrangements and the financial system responds automatically to these demands. (Bageho, 1873) argues that the financial system played a critical role in igniting industrialization in England by facilitating the mobilization of capital for 'immense works' (Levine, 1997). Schumpeter was most famous to see growth, which strongly supports the idea that a positive relationship between bank performance and economic development through the granting of loans to entrepreneurs to get the best projects that lead to technological innovation through the mobilization of savings, and the draft risk assessment and management, transmission control, and facilitate transactions. McKinnon also supports the idea that there is a relationship between financial systems and economic development. (McKinnon, 1973) as follows: given money and finance, are also subject to a large extent by the banking system in the degree of importance far greater than those granted by most writers on Development. McKinnon also believes that capital markets can contribute to economic efficiency by increasing the rate of return on current capital. (McKinnon, 1973) as follows: The capital market in the economy developed successfully control the efficiency that have been developed in the current share capital for payment of the return on physical and financial assets toward the achievement of equality, and therefore a significant increase in the average yield. McKinnon also provide evidence for Argentina, Brazil, Chile, Taiwan, Korea, Indonesia, Germany and Japan. There is a large amount of literature that

discusses the relationship between financial intermediaries and economic development. We cannot cover all of it or even most of it in this chapter, so we will try to look at some of the literature briefly. (Beck *et al*, 2000, Bekaert *et al*, 2001 and Beck and Levine, 2004) strongly supported the idea that there is a positive relationship between financial development and economic growth. (Levine and Zervos, 1998) studied the empirical relationship between stock market development, banking development, and long-run economic growth. Their research shows that stock market liquidity and banking development are both positively and robustly correlated with contemporaneous and future rates of economic growth, capital accumulation and productivity growth. (Tang, 2006) using a modified growth model to investigate whether financial development would facilitate economic growth among the APEC countries, 1981-2000. I did this for Tang focuses in particular on the implications of the three aspects of financial development on economic growth: the stock market and the banking sector and capital flow. They also found that while there tends to be a positive relationship between development and financial intermediation, and both physical capital accumulation and private saving rates and these results are sensitive to changes in estimation techniques and measures to development of financial intermediation. (Bashir and Hassan, 2003) examine the relationship between financial development and economic growth in some Muslim countries (Egypt, Jordan, Morocco, Tunisia and Turkey). (Bashir and Hassan, 2003) noted that, financial development is expected to benefit from interest rate liberalization in terms of high savings rate, which increases the size of the investment. Used rate reduced to measure the degree of financial liberalization in the economy. Furthermore, in order to understand this trend between financial variables and real estate to examine the causes of five countries. According to (al-Bashir and Hassan, 2003) results, such as time series analysis and data are most useful in investigating the causal relationship between finance and growth. According to the (American economic development council, 1984), "Economic development is the process of creating wealth through the mobilization of human, financial, capital, physical and natural resources to generate marketable goods and services". The concept of the Islamic economic system as described in all its aspects focuses on the worship of the creator, which includes man's duty to develop life on earth, thus securing a decent standard of living for the individual. Islam stresses that man is the principle agent for developing life on earth and hence the development of man is a required condition for the development of society. (Ghazali, 1994) and the beginning of the goals and tasks of the system of Islamic banking are the economic well-being with full employment, and the

maximum rate of economic growth, equitable distribution of income and wealth, and the result of social justice and economic, and generating enough savings and the mobilization of productive capacity and stability in the value of money. (Chapra, 2000) "Economic growth, which is defined as an increase in Gross National Product (GNP) or increase in Gross Domestic Product (GDP), has been the main purpose of most economic studies and models from Adam Smith (the father of Classical Economics) until the present time. Even before Smith there were some opinions regarding this issue. Today growth is still an important topic of serious discussion among economists". In addition, (King and Levine, 1993) develop a model of internal growth with a focus on the link between finance and economic growth. Their model as a model of internal growth, which aims to: With the links between projects, finance and economic growth proposed by the visions of (Knight Frank, in 1951, and Joseph Schumpeter, 1912). (King and Levine, 1993) "In the endogenous growth models there are some factors which affect economic growth, including services provided by financial intermediation which have a positive effect on economic growth". The entire financial system and usually offers special features and services that may affect savings mobilization and allocation of resources and economic development. Financial development occurs when financial instruments, markets and intermediaries, despite the improvement do not necessarily eliminate the effects of information, application and transaction costs. Since the friction and there are many markets, and because laws and regulations, and policies differ markedly across economies, improvements can along any one dimension has different implications for resource allocation in terms of other differences (Levine, 2004). (Sarker, 1997, Samad and Hassan, 1997) concludes that if banks are compatible with Islamic banking laws and regulations appropriate and can provide effective services and banking to promote economic development. In the literature, it is clear that theoretically and empirically, economists consider Islamic banking is viable, acceptable and effective and also highly effective in developing the economy.

IV. AIMS AND OBJECTIVES

The aims and objectives of this research are to discuss the Islamic banking system in Pakistan and its financial instruments for mobilization and allocation of monetary resources. Identify the process of economic development in Pakistan and examine the contribution of Islamic banks in economic growth of Pakistan. This will be achieved by using qualitative analysis of semi-structured interview.

V. METHODOLOGY

In this paper qualitative analysis of the interview questions used regarding the aspect of contribution of Islamic banking system in economic development country. The semi-structured interview has been chosen for the interview survey. 6 managers and advisors from the different Islamic banks of Lahore Pakistan were selected for face-to-face interviews. During the interview session I asked eight different types of questions regarding the contribution of Islamic banking system in economic development country.

Following are the questions:

1. Effect of Islamic banking on the mobilization of monetary resources?
2. Effect of Islamic banking on the allocation of monetary resources?
3. Effect of Islamic banking on encouraging people to deal with the banking system?
4. Effect of Islamic banking on the internal and external economic crisis?

1. Effect of Islamic banking on the mobilization of monetary resources?

Interviewee 1	It was positive
Interviewee 2	Resources increased
Interviewee 3	I think no positive effect
Interviewee 4	yes it was positive but it relies on explanation to the people
Interviewee 5	I don't know
Interviewee 6	I think it was positively effects on monetary resources

Interviewees were questioned about the ways in which Islamic banking has affected economic development and their opinions were coded. Table shows the opinions of interviewees with regard to the effect of Islamic banking in Iran on the mobilization of monetary resources. 66.66% of interviewees answered that converting from conventional banking to an Islamic banking system has had a positive effect on the mobilization of deposits. One of them, 16.66%, answered I don't know and one interviewee, 16.66%, answered that it is difficult to say anything, either positively or negatively.

2. Effect of Islamic banking on the allocation of monetary resources?

Interviewee 1	Monetary resources increased
Interviewee 2	There was no effect
Interviewee 3	It was positive
Interviewee 4	NO answer from respondent
Interviewee 5	I don't know
Interviewee 6	The effect was good

Table shows opinions of interviewees with regard to the effect of Islamic banking on the allocation

5. Effect of Islamic banking on inflation?
6. Effect of Islamic banking on employment?
7. Effect of Islamic banking on internal and external trade?
8. Effect of Islamic banking on real GDP?

VI. RESULTS AND ANALYSIS

In discussing this issue we should look at the factors which lead to economic growth and then investigate the ways which financial systems, especially the banking system, can affect these factors. There are some factors which accelerate economic growth and some factors which are moderators and decelerators of economic growth. During the interview session I asked eight different types of questions regarding the contribution of Islamic banking system in economic development country. This part of paper will provide a qualitative analysis of the following questions.

of monetary resources. As the table shows two interviewees 33.33% did not answer the question and one interviewee 16.66% believes that it does not have any effect on allocated facilities. However, 3 interviewees 50% strongly believe Islamic banking has had a positive effect on allocated facilities.

3. Effect of Islamic banking on encouraging people to deal with the banking system?

Interviewee 1	I don't know
Interviewee 2	Positive
Interviewee 3	It has defiantly had a positive effect
Interviewee 4	It effect has been good
Interviewee 5	I don't think so
Interviewee 6	Mostly religious people have been encourage to deal with Islamic banking system

Table shows the opinions of the interviewees regarding the effect of Islamic banking on encouraging the people to deal with the banking system. As this table shows two interviewees 33.33% answered that they do not know or cannot answer accurately. However, 66.66% of interviewees believe that its effect has been good and positive.

4. Effect of Islamic banking on the internal and external economic crisis?

Interviewee 1	It has no positive effect because Islamic banks don't follow full Islamic principles.
Interviewee 2	I think it has positive effect.
Interviewee 3	Not respond.
Interviewee 4	Yes positive.
Interviewee 5	The effect against economic crisis is good.
Interviewee 6	not respond.

Table shows the opinions of interviewees regarding the effect of Islamic banking on the internal and external economic crisis. It shows that interviewees three and six (33.33%) did not respond to the questions and interviewee one (16.66%) believes that it does not have any effect because the banking system does not strictly adhere to the principles of Islamic banking. Interviewee two, four and five (50%) believes that their effect on external and internal economic crisis was good.

5. Effect of Islamic banking on inflation?

Interviewee 1	Not respond.
Interviewee 2	It has no positive effect because Islamic banks don't follow full Islamic principles.
Interviewee 3	It causes decreasing inflation.
Interviewee 4	No answer from respondent.
Interviewee 5	Yes it will work against inflation.
Interviewee 6	Inflation reduce.

Inflation is a factor which makes the process of growth and development slow so, if the Islamic banking system can decrease inflation, it will support the growth and development process. So this table shows the interviewee's point of view about this question. As this table shows interviewees one and four (33.33%) did not respond to the question and interviewee two (16.66%) believes that it does not have any effect. Interviewee three, five and six (50%) believes that, inflation would decrease if there were no other factors such as government expansionary monetary policies.

6. Effect of Islamic banking on employment?

Interviewee 1	Yes it creates employment opportunity
Interviewee 2	Yes positive effects on employment
Interviewee 3	Yes positive
Interviewee 4	I think no effect on employment
Interviewee 5	Yes it has good effect
Interviewee 6	Obviously have good impact

Employment is a very important issue regarding both economic growth and income distribution so it is necessary to choose a banking system which is able to increase employment over other systems. Table shows the opinions of the interviewees regarding the effect of Islamic banking in Iran on employment. As this table shows, only interviewee four (16.16%) believes that it has no particular effect above other systems because the banking system does not adhere strictly to the principle of Islamic banking. However, other interviewees, (83.33%), believe that Islamic banking has a positive effect on employment.

7. Effect of Islamic banking on internal and external trade?

Interviewee 1	don't think so.
Interviewee 2	Positively effect.
Interviewee 3	Not respond.
Interviewee 4	I don't know.
Interviewee 5	Positive effect on both type of trade.
Interviewee 6	I don't think so it has significant effect on trade.

Trade is a topic under consideration in economic literature regarding economic growth. It is so important that it has become centre for division of developmental strategies. As this table shows only interviewee six (16.66%) believes that it has had no more effect than other systems. Interviewee one and four (33.33%) is not sure that Islamic banking has a significant effect on trade and interviewee three (16.66%) is not respond this question. Two and Five (33.33%) interviewees, believe that the system has had a positive effect on both type of trade,

8. Effect of Islamic banking on real GDP?

Interviewee 1	Yes it has positive effect
Interviewee 2	Yes positive
Interviewee 3	No special effect because its binging time of Islamic banking system
Interviewee 4	It is help full to increase the real GDP rate
Interviewee 5	Not respond
Interviewee 6	It is effective

Growth rate of GDP is one of the main aims of the all economic activities so the main aim of the every banking system should be to increase GDP. Table shows the opinions of the interviewees regarding the effect of Islamic banking on GDP. As this table shows only interviewee three (16.66%) believes that it is binging time of Islamic banking in country and interviewee five (16.16%) did not answer the question. However, four interviewees, (66.66%) believe that Islamic banking in Iran has had a positive effect on GDP.

VI. CONCLUSION

This document is a preliminary study on the relationship between a pilot Islamic banking and economic growth. The results generally show that in the long run, the financing of Islamic banking is positively and significantly associated with economic growth and accumulation of capital in Pakistan. Islamic financial system more stable than the traditional banking system due to the elimination of debt financing. It also reduces inflation in the economy and cannot provide the money to go higher than the supply of goods. Islamic banks are less risky than conventional banks, both for investors and entrepreneurs share some of the risks involved in the business. The aim of this paper was to consider the opinions of the interviewees regarding the role of Islamic banking in Pakistan in economic development. Six interviewees were asked about the types of effects of Islamic banking on economic development in the Pakistan. They were asked about 8 different types of effects. Their responses were as follows: (1) 66.66% of interviewees answered that converting from conventional banking to the Islamic banking system has had a positive effect on the mobilization of deposits; (2) 50% of interviewees agreed strongly on the positive effect of Islamic banking on allocated financial facilities; (3) 66.66% of interviewees believe that the effect of Islamic banking in Iran on encouraging people to deal with the banking system has been good and positive; (4) 50% of interviewees believe that the role of Islamic banks in the economic crisis is quite positive; (5) 50% of interviewees support the role of Islamic banking in the reduction of inflation; (6) 83.33%, believe that Islamic banking has a positive effect on the employment; (7) 33.33% of interviewees believe that the system has had a positive effect on trade, for which the provision of financial facilities to this sector; (8) 66.66%, believe that Islamic banking in Iran has had a positive effect on GDP. This result also indicates that improvement of the Islamic financial infrastructure in Pakistan may benefit economic development. Islamic banks can play a great role in Pakistan of today, by acting on few recommendations provided above and acting truly as Islamic banks not merely banks with word "Islamic" attached to them.

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Chaotic Disorder and Performance in High Velocity Environments: Some Coping Strategies

By Dr. Douglas Peterson

University of South Africa, Unisa

Abstract - The current international business environment suggests potentially wide performance variation for both SME and large corporations, especially as it relates to execution of strategy. This paper contends that extensive measurement at the granular level of performance reveals the strong ability to inform our understanding of chaotic structures and subsequent performance enhancements. The argument is that we often miss the trees for the forest and should engage corrective actions using both mathematical application and managerial action in a manner similar to forest propagation and husbandry rather than more complex forestry. This paper highlights strategic areas of measurement and performance tied with chaotic structural formulae. It suggests ways to recognize poor growth that would be overlooked in an organizational pathology termed in this paper as Corporate Attention Deficit Disorder, or CADD. The paper recommends a course of action that creates the similar speeding-up interaction as Methylphenidate in humans, but hopefully without the side effects of impaired reaction or learning. To date no papers appear in ProQuest, EBSCO-Premier, AoM, SMS, DSI, or the AIB so this contribution is potentially novel and informative to managers who seek to be on the forefront of real-time evidence-based performance management. Strategies for SME and larger organizations are discussed as are the simple structured equations by Lyapunov, Poincare, Myers-Kress, and Lorenz and the nonlinear regression that is necessary for this practice.

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I. MEASUREMENT ERROR IN THE HIGH VELOCITY ORGANIZATION/HIGH VELOCITY ENVIRONMENT

According to Brown and Eisenhardt (1997), high velocity environments present phase shifting competitive pressures that force rapid fluctuation and adjustment in rapidly paced competition. Brown and Eisenhardt (1997, 1998), Eisenhardt and Bourgeois (1988) identify hyper-competition and show it is just a temporary phase, but is resident in select industries. Example industries for the purposes of this paper are information technology, software development and marketing, cloud computing, application development, and tech innovation sectors who all exhibit perpetual states of change. In fact, you might say that all of these companies and industries are in a constant struggle to "become something else." For example, the New York Times (October 19th, 2012) suggested that the product

life cycle of a telephone or computer app is about 35 days. In this world, competitive advantage or value creation at the product or divisional level is at best fluctuating, and at worst poor, nasty, brutish, and short with a stochastic function. Hence, high returns of even stable leading performance indicators cannot be based on sets of resources or competencies, but must be measured in the granular metrics of performance and placed into non-linear regression modeling. These types of environments are resonant of the Schumpeterian creative destruction of *status quo* in light of frequent and significant changes to strategy execution *ex-post-facto* by necessity or proclivity.

The prevalence of high velocity environments is evident and the necessity of increasing the speed with which companies assess their competitive environment, develop new products. Literature (e.g. Dimandescu and Dwenger 1996; Meyer 1993; Stalk and Hout 1990; and Vodosek and Sutcliffe, 2000) identifies the speed at which companies bring their product to market as one of the most critical issues today while exemplifying product development cycles in tech companies like Apple Computer or Google who face those innovation periods of 35 days or less to conceive, prototype, and file patent for innovative products. Empirical studies appear to support this contention. For example, Eisenhardt and colleagues (Bourgeois and Eisenhardt 1988; Eisenhardt and Tabrizi 1995; Schoonhoven, Eisenhardt, and Lyman 1990) have looked extensively at the effect of speed on competitiveness of companies in these environments. They found that fast decision making by management based on rich real-time information (Bourgeois and Eisenhardt 1988) is closely linked to high velocity performance, however the risk of Type I, Type II, or Type III error (that is, working on the wrong problem) increases. These accounts provide evidence that rapid cycle organizations operate in an "*aetateceleritate*" which requires them both to make decisions faster and to implement them more quickly (Vodosek and Sutcliffe, 2000). Finally, according to Eisenhardt (1986) agents will competitively pursue their own interests under a variety of conditions like escalation of commitment to a current strategy. Agents will compete with one another over anything with positive valence like money or some other extrinsic or intrinsic reward (Peterson, 1997).

In terms of mathematical modeling for this type of environment it is interesting to note that it has been around for a long time. Richardson (1960) developed a

Author : E-mail : drdoug3@gmail.com

mathematical model for the performance variance of managerial outcome situations, which Mayer-Kress (1992) analyzed, noting that the Richardson model was an extension of the logmap $x^{t+1} = x^t - k^{21}(x^t - x^0) + k^{22}(1-x^t)$. $y^{t+1} = y^t - k^n(x^t - x^0) + k^{n+1}(1-x^t)$ where x and y would be the expenditures of the two divisions, k^{21} and k^n are forces that control their activities to pre-performance period levels, and k^{21} and k^{n+1} represent the speed of the growth in the trajectory. Mayer-Kress (1992) found that the measurement remained stable if the arc of the trajectory k^{21} and k^{n+1} remained below a hypothetical value of 3.0. If either parameter exceeded 3.0 the system went into chaos immediately, and did not stop at the intermediary oscillation (Guastello, 2006). Quicker managerial reactions were required and possible. Interestingly enough, it *would* be possible through the three party solution by Poincare (1905) to extend the model to n systems and to $n+2$, systems involving ∞ types of companies and operations. With nonlinear regression, it would also be possible to compare oscillatory phases for predictive points to determine more and less salient predictors of performance. There are other constructs that bring attention to chaotic situations. For example, agent-based models illustrate how individuals working as agents, and in their own self-interest, produce self-organizing systems consistent with the desires of other stakeholders (Eisenhardt, 1989). According to Russell and Faulkner (2004), agency based self organizing systems can manifest sudden and discontinuous changes known as *phase shifts*, in light of unpredictable events, cognitive dissonance, disagreement, environmental turbulence, or board directives. These phase shifts discussed in the next section move toward the tone, scope and state of the dynamic space while presenting chaotic and coping mechanisms.

II. PHASE SHIFTS

Figure 2 shows implementation A with phase shifting toward strange attractors. It's this phase shifting that causes a performance reaction in granular metrics. Figure 3 is the representation of the phase shifting between performance goals B^n and strange attractors S^n . Researchers seem to be in agreement that these environments require more responsive forms of organizing because of their chaotic quantum nature. Responsive organizations are characterized by sensitiveness to environmental stimuli and ability to act quickly. Responsiveness in this sense doesn't simply mean reacting quickly, it also means having the data and the response plan as event micro-phase information provides leading indicators to rapid managerial activity. Not doing so, or missing event horizons is the nature of what this paper calls *Corporate Attention Deficit Disorder*.

The early and mid-1990s were the start of some relatively serious inquiry into the organizations sciences and chaos with the journal *Organizational Science* taking a leading role in inviting and disseminating scholastic research. Approaches like chaos and conflict (Guastello, 1996), and organizational integration of chaos suggest that conflict breeds self organization through dissonic and iterative processes. From these studies and from the mathematical modelling, we can isolate some patterns inherent in chaotic situations where outcomes are rapidly changing. We can also discover a self organizing portion of chaos that brings predictability followed by the restatement of chaotic and quantum patterns as predicted by relative real-time measurement *attention to performance* and performance itself. A theme is that not all organizations pay continuous attention to granular data in certain cases, these organizations with the CADD pathology could use a methylphenidate type intervention that speeds up organizational neurotransmitters and enhances cross hemispheric attention patterns.

III. CORPORATE ATTENTION DEFICIT DISORDER, INDICATIONS

While Figure 2 (above) and Figure 3 (above) show the results of inattention span and cyclonic through which inattention is actuated it is necessary to find a potential treatment for this corporate disease. According to the Physician's Desk Reference (PDR) *attention deficit disorder* is indicated or characterized as something that begins in an early stage of life and often continues into maturity. It is indicated by a persistent pattern of inattention, impulsiveness, hyperactivity, carelessness, abruptness, and high risk activities. In humans the condition is recognized as running in families. Similarly, the conditional metaphor could be said to run in industrial groupings, particularly in high velocity sector organizations, diagnosed through outward portrayal of industrial positioning and competition and organizational culture. In humans, the interventional process is typically to administer a methylphenidate while twinning that with talk therapy. In organizations, the metaphor could be extended to human resources development aided by the processes of continuous measurement and attention to informational, scale, volume, cost, and differentiation based competitive advantage, all helping to create the moderated CADD. It is important to remember that interventional processes are designed to assess and react to changing cultural distance while finding areas of adaptation potential and finding opportunities for potential for economies of scale through adding volume, decreasing costs, differentiating products and improving industry attractiveness. Firms must enact continuous recombinant strategies and actions to leverage their firm specific advantages in order to react to and benefit from

the environment. A simple question is, "how often do they need to do that"? Figure 4 shows four strategies requiring differing amplitude and modulation of recombination.

a) Let's examine adaptive processes

High velocity organizations are those in the fast change and little changes section; they are filled with complexity and continuing tactical changes, it doesn't take into account the complexity and chaos in the environment that triggers necessary organizational adaptation of large environmental changes and self-organization. To use the parlance of the PDR or the Diagnostic and Statistician's manual of Mental Disorders, IV (DSM IV), one organization is that which processes slowly into varying states while adapting to the environment. The other is the type of organization that processes large environmental change quickly, moving from slow little change to fast large change when necessary and perhaps back again. A third is one that concentrates from one type of environmental situation and back again, rather like putting out fires in the forest while disregarding the pathologies of the trees. This is the CADD pathology.

b) Nonlinear Dynamic Systems Theory (NDST)

Working through the system dynamics that organizations face in a rapid velocity environment, we can turn to the NDST (Khalil, 1996), which consists of a group of mathematical concepts explaining how events might model the development of chaotic structures, depending upon their variability and the interrelationships with measured in real time performance. Simple NDST modeling techniques are used for the empirical explanation and prediction of a rapidly changing event. In this section, a demonstration of the NDST used to shape organizational structures and activities for evidence based performance improvement is highlighted.

This section should be interesting to even the most *arithmophobic* reader. Presented are simple and well understood methodologies from Poincare (1905), Lorenz (2005), and Lyapanov (1902). While the calculations would take days to complete by hand, these calculations can now be performed with elementary mathematical software including SPSS/PASW, SAS, Mathematica, or Python based systems. At the very base, we're looking for varying marginal differences in outside decimal positions (at the 8th decimal or further) while looking at variations in $\sum(\text{period } 2_r - \text{period } 1_r; \text{period } 4_r - \text{period } 3_r; \text{to period } \infty - (\infty-1)_r$, where r is the repeated measure in subdivided meter called an observational moment. Since this method becomes complex over a very large number of observational moments, we need to introduce structured equations that make for easier calculation and modeling. Consider the case in Table 1 where we have

some continuous variables that fit the following strategies (Hax, 2005):

We need an approach toward the analysis of the dynamics of a measurement path which determines the constant progression of marginal change. The measurement path should look rather precise, rather than a typical shotgun analysis of possibilities played out through linear modeling or games. In this process, we can rely on a small number of possible equations that we can test through nonlinear regression analysis where there are four basic models in a set where everything is a function of e (Guastello, 1996).

In consideration of the first several elements, Equation1 is a simple exponential function while Equation2 contains an unknown split variable that measures variance in granular performance and outcomes. Normally, the procedure would be to test both models while comparing R^2 for Equation1, Equation2, and for a linear model. In Equation1, $z^2 = \exp(\theta^1 z^1) + \theta^2(1)$ where θ^1 is a nonlinear regression weight. θ^1 indicates the level of variable complexity and turbulence. If $\theta^1 < 0$, the time series is veering toward a fixed point attractor. This is like a Lyapunov (1902) measure because when $\theta^1 > 0$, measures are becoming more chaotic and can ascertain the presence of chaos. Equation1, with very large numbers of parameters, would be iterated over time and the outcomes measured up to the 8th to 10th decimals. At this granular level, chaos starts to show itself and the Lyapunov starts to vary above or below 1. Nonetheless, if we know z^1 , it tells us what z^2 is going to be even under chaotic conditions, assuming that the model fits the data. Johnson and Dooley (1996) showed that Equation1 provides reasonable estimates of fractals associated with data generated by the Lorenz and Rossler systems (Peitgen et al, 2006), which model chaotic attractors.

The second model in the exponential series contains an unknown bifurcation effect, which indicates the presence of a variable that affects the inflection of a curve: $z^2 = \theta^1 z^1 \exp(\theta^2 z^1) + \theta^3$. If θ^1 is sufficiently large, we can observe oscillations, period doubling, and chaotic situations when we iterate the function. May and Oster's (1976) model for population dynamics, is a transformation of the Equation for the logistics shown in Figure2.

The structural equations technique with nonlinear regression has been used in Peitgen et al (2006). Should we wish to use an application of a complement or system supplier to a computer assembly firm/retailer, software producer, game app inventor, semiconductor manufacturer, or any organization that depends upon rapid development of products the measurement of performance variables can represent desire to be a system-lock provider with prohibitive switching costs. The application of performance variables of customer switching costs, rate of product

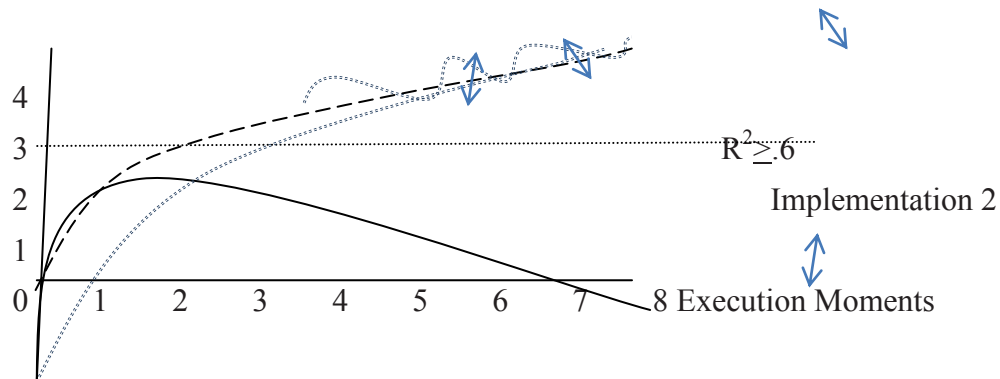
development, and competitor cost to imitate would be variables of interest as chaotic variances in the stability of measurement may show withering commitment or performance to a crucial element in the manufacturing or supply process. Additional application involving operational costs of performance, product innovation in competitors as well as production efficiency per unit are important. As they begin to vary widely over time and across market variations these measures become of great interest to the paper.

In example tech companies measures were taken from A/R, 10-K, and reliable media like the WSJ, FT, and from financial databases over the period 2001 to 2011. The widening of variance in the models are interpreted as predictor of chaotic structures in the short term, however should there be multiple numbers of measurable division variances within and across competitors as multi polarization effects take hold. These should complicate divisional objectives, but with concurrent observation it should be possible to react in a situation like that in Figure 2 and correct if CADD is not present or is controlled through the use of an

organizational methylphenidate through the attention spanning role of the decision support system and analyst keeping track of very frequent measures.

Should be results of Equation 1 analyses between measures be relatively accurate, $R^2 > .60$. The next step is to iterate functions into the future to see if they would produce similar, varying, or stable forecasts. In this case, the Lyapunov exponent (1902) would be positive (that is, chaotic) in both equations, with the two functions predicting some different futures. For Equation 1 there is a sharp and gradually increasing upward bifurcated trend with performance moving toward an uncontrolled state due to CADD and inaction. Equation 2 predicts an upward blip, followed by a drop in bifurcation due to evidence based managerial action and the regaining of control. In one, there is a situation of attention and effective adaptation. In the other, there's a situation of managerial inattention, or Corporate Attention Deficit Disorder (CADD). These two futures are possible depending on managerial perception, surveillance and action. Please see Figure 3, just below.

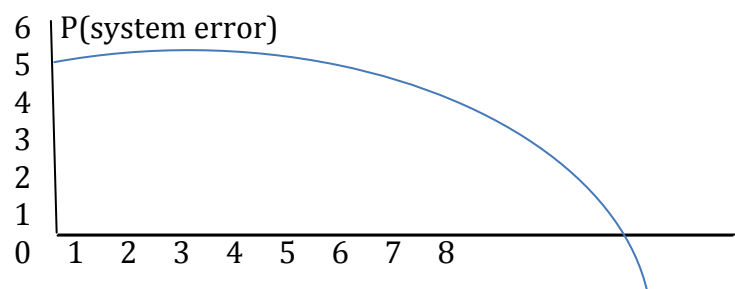
5 Chaos Phase Threshold from 3.0 chaotic movement @ Implementation 1



As a point of clarity, the movement of performance into a chaotic state would be enormously expensive to manage and correct. This makes the case that a concurrent Lyapunov style measurement is necessary for both types, and a CADD oriented intervention becomes necessary. While the human subject might try a methylphenidate, it's not possible to administer it to an organization. So what can be done in the CADD type organization? While there's an upwardly

curved polar experience and a movement toward chaos, it becomes necessary to intervene with evidence based management, frequent measure and subdivided correction. With low numbers, however, a Lyapunov variable shows a movement toward non-chaotic conditions and asymptotic stability in terms of lowered system error and better execution. See Figure 4 just below.

Figure 4 : Non-chaotic conditions and asymptotic stability



The next section considers a type of organization that can benefit from CADD training or development when non-CADD presents.

c) *CADD Training and Development, Intervention and Treatment*

The notion of CADD at the functional, business, and corporate level leads to the question of what dynamics could be involved within each group. Disagreement of choice or measurement can result in a polarization dynamic that makes correction difficult at best. Polarization is often connected to conflict in groups, either as a starting point, or as a high-water mark of the group's activities. While complex group dynamics are involved, the underlying processes are chaotic. Groups should often discuss their ideas, plans, and attitudes and find they have differences of opinion. In cases where the participants are not too emotionally involved at a personal level, they often find midpoints or

compromise positions that are agreeable to most participants. If the topic or attitude target is "important," however, continued discussion will lead to polarization of group members, rather than compromise. Latane (1996) expressed the dynamics as a catastrophe model which is one model of a comprehensive theory of discontinuous events (Zeeman, 1977). The response surface shown in Figure 5 shows the range of places that a system may occupy along a behavioral variable, y . The response surface contains some distinctive pleats or cliffs, however, and movement across those cliffs produces dramatic qualitative change. The shaded region represents the range of locations where the system is very *unlikely* to go; that is, the shaded region is a *repellor*, move away from it, instead of toward it as with an attractor. Figure 5 (adapted from Guastello, 2008).

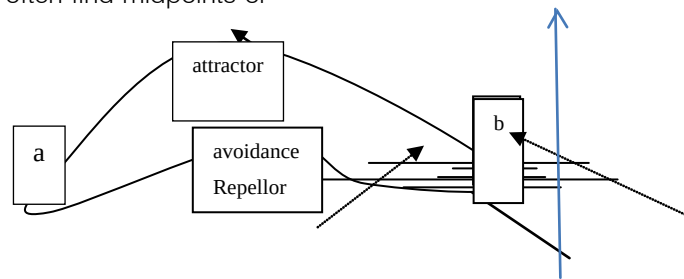


Figure 5 : Adapted from Guastello, 2008

There are two chaotic states (attractors a and b). The group begins at the unstable points, and also known as a saddle, on the surface and then converges into a saddle y as corrective action is indicated by evidence. This cusp model also contains a second control variable (asymmetry) that corresponds to the arrows in Figure 5, which would govern whether a person would shift attitude toward one pole or another, or decide to join some coalitions for control. This is very easily transferable to the small and medium sized firm in a measure of fit of orientation to the asymmetry control parameter, with the attitude toward specific policies used as the behavioral response. Arguably, while these two constructs might be similar enough to be considered redundant, the cogency of the arguments from the group favoring one pole or the other could be influential on undecided people in much the same way as the perception of an ambiguous Figure is influenced by the quantity and direction of specific details in the drawing (Stewart & Peregoy, 1983).

Given that co-effort is important this model also indicates that people could waffle between the two poles before locking in to one attractor or another. The waffling process is more formally known as *hysteresis* which is the dependence of a system not only on its current environment but also on its past environment. This is depicted in a two-dimensional display in Figure 6,

chaotic hysteresis. Movement is evident between goals "G" and strange attractors "S". Outside of a control limit there are three basic pathways by which a system can become chaotic (Guastello, 2006). The first is an application of the three body problem that incorporates strange attractors.

The classic strange attractor between bodies, the observer or scientist must multiply the number of measurements of data relating to the attractor points (aka attracting events) and relevant strategic movements towards measured outcomes B(1-3). A strange attractor, S_n can be multiplied by the total attractor events however we want B(1-3) to be coherent in the enacted environment. There however are $S(1 \dots \infty)$ attractors. These strange attractors create the out of control limit artifacts where many are due to random chance making the notion of control limits meaningless (Guastello, 1996; Guastello, 2006). In the case of CADD, the opportunity for action is that when a path enters the field it is pulled in different directions in unpredictable ways. Take the case of the innovative tech firms mentioned previously. They have products, technologies, individual goals for each, implementation plans and missions that address each individual product line. There is also information from the environment related to international news, economics, stakeholder pull, and stockholder demands with differing interpretive

bases from which they address their knowledge acquisition and ability to phase from one state to another. Each of these attractors pulls from subject, body, and attention of the organizational adaptation at hand. There may be other chaotic circumstances pulling the audience to chaotic tendencies. While attractors may coalesce within activities all attractors combinatorially do not. It presents the circumstance of minimizing variance of attractor gravitation toward scenarios that speak to the near and far term. An experiment reported in Puu and Sushko (2002) reported that odds of control were not enough to limit attractors and their potential chaotic environments. When the experiment was repeated with $5 - \infty$ bodies and $5 - \infty$ attractors, no methods were sufficient to eliminate extraneous forces and chaos was more or less guaranteed. The implications are that managers have to be prepared to embrace chaos rather than eschew the possibility.

Primary to the NDST are the familiar mathematical modeling procedures of strange attractors, chaos, quantum theory, fractals, catastrophe and agent moderation (Guastello, 2006). One example is in Guastello (2006) where interactive dynamics shows up in political, cultural, and organizational science literature. Within simple or multilateral competitive dynamics, bifurcations and trifurcations of conflicting interests that may lead to interactions become self organizing through the routinization of conflict where that conflict becomes predictable. Another example lies in organizational sciences where Gregersen and Sailer (1993) introduced the notion of chaotic systems in organization. This may well be the seminal point for which chaos and quantum theory makes the leap from the hard sciences into the social sciences, especially in organizational science.

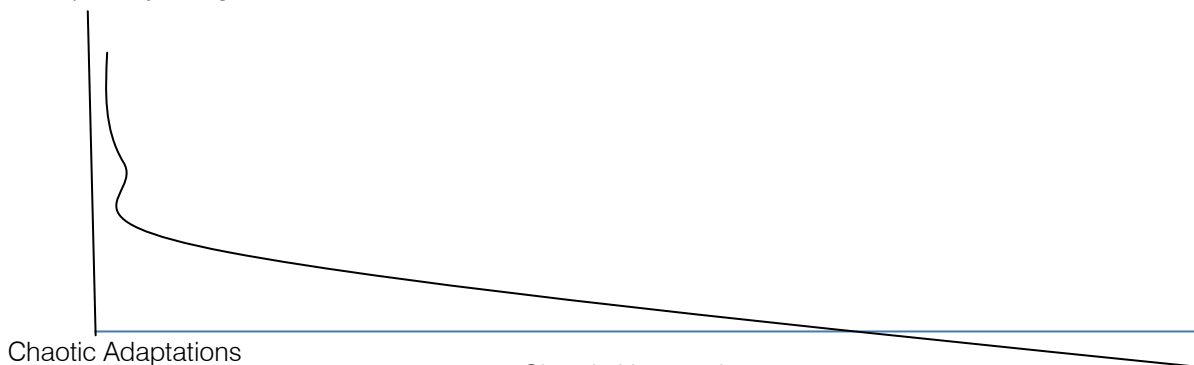


Figure 6 : Chaotic Hysteresis

In organizations, chaos can be seen in the economic environment, but also on a more micro scale of changing abilities to add or vary necessary volume, manage costs, differentiating products or services, position the firm into the industrial position of fit, and deploying learned knowledge. This chaos has three distinctive features. The first is a non-repeating sequence in which the random flux over time looks like wildly random linearity. Every iteration is

What's noticeably lacking in organizational literature however, is the application of nonlinear dynamic systems, particularly in training for the expectation of reaction to a relevant chaotic international or domestic environment where attention to tasks at hand are apparent.

d) *The Intervention and Treatment for CADD*

The intervention and treatment for CADD can resemble the intervention and treatment for ADHD or ADD. Typical is the co-treatment with methylphenidates as organizational cultural and process stimulants where it is frequently necessary to speed up attention and comprehension and tie that to multi-group discussion processes.

The organizational development processes focus on finding customer level performance indicators and modeling them mathematically to determine which sets of measures are more predictive of necessary action to performance. In the case of promoting innovation and organizational renewal, measures like rate of product introduction, time of innovation to market, % sales from new products, R&D expenditures, costs and efficiency of product development, % involvement in customer value chain, % of development from joint ventures, % customized development for focused customers, degree of product scope, bundling product groups, generating and measuring variations in switching costs, and competitor cost to imitate. It would seem that modeling variances in measures to a performance or effectiveness measure should yield the two or three best measures, and therefore increase overall performance through the processes of getting, speeding and acting upon attention processes.

is different and the degree of effectiveness in understanding, use of knowledge, breaking concepts to meaningful chunks, putting things together and making judgments about the reliability and validity of data. In each case, delivery, rapport, knowledge transfer and course goal attainment varies. In the organizational sciences, we would call that chaotic system in Figure 1 "out of control" and thus needing linear upper and lower control limits of no larger than $1(\sigma(\mu))$. The first example

would be non-repeating sequences while the second would be a situation of boundedness where the variables under observation are control limited imposed through rapidly changing standard deviations of $1(\sigma(\mu))$.

Ideally, managers are trained to recognize the rapidly changing environment, adapt, recombine assets, and move back to a state of normalcy. This is a rapid adaptivity activity if that state is chaotic. Another type of organization is the one that adapts to the same problem more methodically and has the capacity to come back to normalcy, operations within statistical control. Movement within the ranges is unpredictable while movement within the second is limited as being slow to change and adapt, in fact about 5x less adaptable on a time scale.

The third feature is sensitivity to initial conditions. While points of contact start close, with the introductions and assessment and venturing processes early, those processes can suffer entropic decay as the partnerships progress. Taken to a longer time series events with financial and performance variables measured frequently over time (perhaps 52x per year, 5 years) strategic performance iteration becomes a computational technique of starting with a number of experiences both positive and negative and a very large η because chaos mapping requires very large amounts of data iterating through a simple equation.

The results for the magnitude of conflict between organizations has an expected value where $R^2 = .8$. The Lyapunov exponent shows strongly positive signifying a trend toward vicious and high velocity environments with then a repositioning toward relative stability.

Suggestions and Research Directions

All of these structures need further research in the social sciences and administrative disciplines where lesson and solutions are taught in a cause – effect linearity. Chaotic structures arise in managerial and corporate competition, especially in the tech environments. In these industries, even Tuckman (1965) would predict a stage of storming and norming to productive behavior. These may come from various strange attractors within both the environment and the corporation. The interest is whether it is better to let the chaotic tendency arise or to intervene with rules and specific measures or let the chaos go with occasional continuous correction. Within the best practices literature, there is a general exhortation to plan, organize, lead and control performance. It implies a linearity so there is no motion that is out of control and where maximal productivity should naturally occur. Within the chaos theory literature the case is made that the naturally occurring strange attractor creates compound isolations and chaos. While the chaotic system may predict natural trepidation, the Lyapunov, Richardson and Meyers-Kress models would indicate that productivity comes after a period of disorganization followed by self organizational system. Strange

attractors create bifurcations, and bifurcations initially create conflict followed by a following period of reorganization and conflictual dynamics. The interesting question is whether there is anything the manager can do to emerge with a self organized system of productivity more quickly. This is absolutely an area for more exploration.

Let us explore a few lessons from the material. For each one of these can provide an independent research direction for the interested writer. The first lesson is to embrace the inner chaos of organizational activity. Knowing there are generally self organizing systems, it is important to realize that granular and financial variation can be the mechanism of performance improvement, the leading indication of chaotic variation can speed correction by months.

The second lesson is there are qualitatively and quantitatively strange attractional events which predict placing organizational variance in context. A strange attractor can be an external event like changing scale, market concentration, location, productivity, size of customer market, customer revenue, acquisition cost, customer investments in relationships, complementor relationships, ROI, risk volatility investment base and cashflows can all serve as the red herrings of strange attractors. The third lesson is to be patient, according to the chaos and quantum literature, systems do organize. How they organize in organizational performance and the span of time it takes will vary under which the conditions and material are clarified. Fourth, and finally, while there is variance in activity, there will also be variance in professional understanding as well creating a strange attractor of its own.

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- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
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- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

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- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.



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- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
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Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
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What to keep away from

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The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
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Approach

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Approach:

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